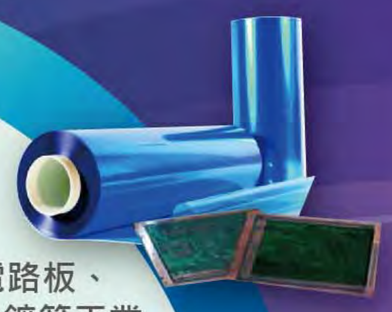
長興材料
ETERNAL MATERIALS

長廣精機
ETERNAL PRECISION MECHANICS

日興材料
Nikko-Materials

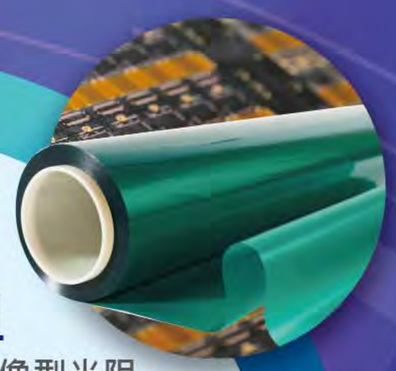
Dry Film Photoresist
負型水溶性乾膜光阻



負型水溶性乾膜光阻主要應用於印刷電路板、導線架、IC基板、IC封裝等精密蝕刻、電鍍等工業之影像轉移製程。藉由堅強研發團隊，長興並可配合客戶之特殊應用及需求，進行產品設計生產，例如電鑄、化學精密蝕刻 (Chemical Milling) 等工業。

Dry film photoresist is the key component used in the image transfer process. It is widely used in precision etching and electroplating products such as Printed Circuit Board (including Rigid board, Flexible board, Rigid /Flexible composite board, and HDI), Lead Frame, IC Substrates, IC packaging, etc. With strong in-house R&D capabilities, we are able to design and develop dry film products to specifically match our customers' requirements for various processes such as Chemical Milling, Electroforming, etc.

Dry Film Solder Mask (DFSM)
乾膜防焊光阻



高精密度綠色乾膜感光弱鹼顯像型光阻，應用於高精密度金屬基板/陶瓷基板/玻璃基板外層線路保護 (Solder Mask)，可適用於真空壓合或熱壓合製程 (roll to roll)，具有優良的耐熱性、高解析能力及較寬的操作範圍。

The DFSM is an alkaline processable green photosensitive film used for the high accuracy metal substrate / ceramic substrate / glass substrate to protect wiring (Permanent Solder Mask), and be easily applicable to vacuum lamination or hot roll to roll laminator process. The DFSM has excellent heat resistance, high resolution and wide operating range.

Liquid UV Curable Marking Ink
液態文字油墨

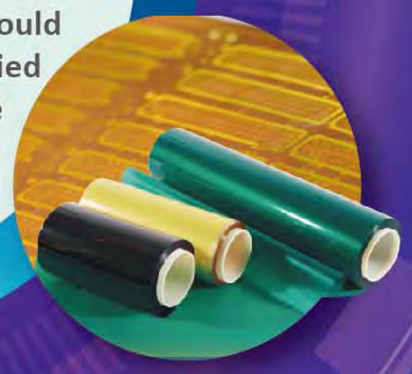
印刷電路板的文字及圖形標示印刷。UV硬化型文字油墨屬於網板印刷製程，適用於雙面及多層印刷電路板的文字及圖形標示印刷，油墨硬化後具優異之附著力、耐熱性。

UV curable marking ink applicable to printing marking and graphics on double face and multiple layer PCB. UV curable marking ink of screen printing property with high resolution. The coating cured ink features excellent adherence and heat resistance.

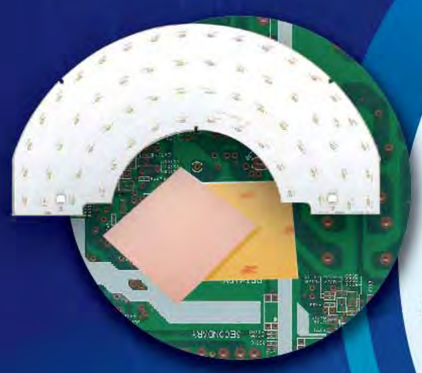
Photo-Imageable - Coverlay (PIC)
感光型覆蓋膜

低溫150℃烘烤型的高精密度乾膜感光弱鹼顯像型光阻，應用於高精密度軟性印刷電路板(FPC)/金屬基板外層線路保護。

The photo-imageable coverlay could protect outer layer circuit applied to the high accuracy Flexible Print Circuit (FPC) and metal substrate.



Copper Clad Laminate
銅箔基板



銅箔基板(硬板)依製程技術及產品應用主要分為FR-1、CEM-1、CEM-3、FR-4，一般應用於民生家電、資訊周邊產品與相關通訊電子產品上，如液晶顯示器、LED及傳統照明等驅動電源板。

Copper Clad Laminate (Rigid boards) are mainly divided into FR-1, CEM-1, CEM-3 and FR-4 according to process technology and product applications. They are generally used in home appliances, information peripheral products and related communication electronic products, such as LCD monitors, LEDs and traditional lighting drive power supply boards.

Vacuum Laminator
真空壓膜機

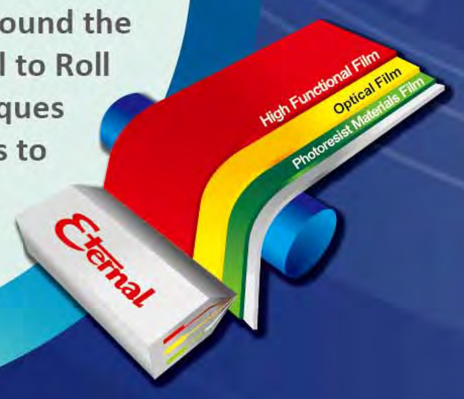
真空壓膜機包含全自動機、半自動機與依客戶需求設計之客製機。真空壓膜機以獨家傳送膜搬運技術與真空壓膜膜組，整合熱壓系統等附屬設備一體化，以提高生產效率。應用於IC封裝用載板外，亦適用於PCB/FPC/LED/半導體等相關製程應用。

Vacuum Laminator can be Semi-Automatic, Automatic or Customized. Vacuum Laminator is developed by applying the original carrier film system technology and the high-precision hot press system technology, which can be increased production efficiency.
Its main application is IC substrate industry, other applications include the related manufacturing processes of PCB / FPC and LED / Semiconductor industry.

Toll Coating Service
精密塗佈代工

塗佈產品跨及各產業，塗佈產能佈局全球。多元化Roll to Roll塗佈設備暨豐富代工經驗，提供全方位塗佈代工服務，滿足各類塗佈產品所需製程需求。

Eternal Toll Coating Service has spanned across various industries and conducted around the world. We offer the diversified Roll to Roll coating equipments and techniques with adequate proven services to meet any product coating requirements by our customers.



LAMINAR® E9400DI

SEMI -LDI

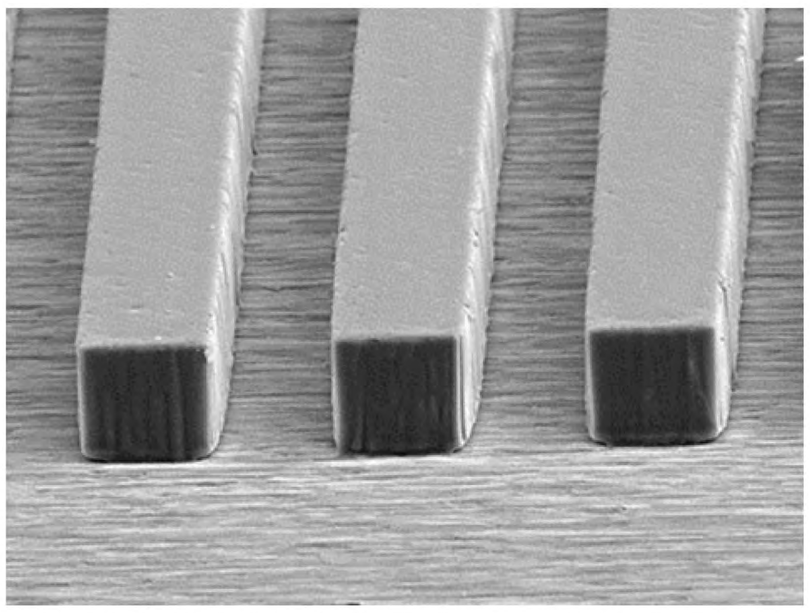
SEMI-LDI DRY FILM PHOTORESIST

FEATURES

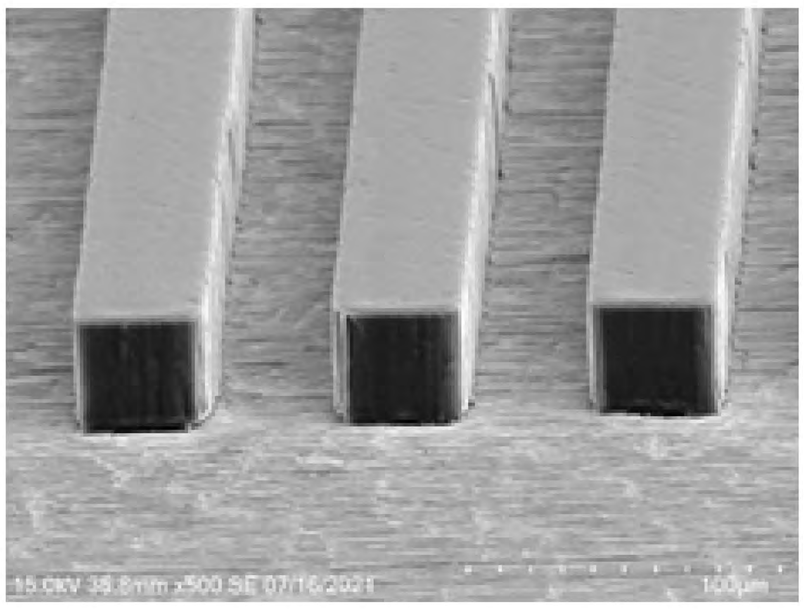
- Designed for conventional and DI/LDI exposure system applications
- For conventional exposure system, i-line and h-line
- Excellent tenting ability
- Excellent resistance to plating
- Excellent high resolution and adhesion

特性

- 可同時於傳統曝光和雷射曝光製程設計
- 適用於傳統曝光與DI/LDI i-line與h-line波長
- 優良蓋孔能力
- 優良抗電鍍能力
- 優良線路解析度及附著力



E9415DI L/S=40 μm/40 μm
Collimated Light



E9415DI L/S=40 μm/40 μm
Nuvogo 800 (h-line)

CHARACTERISTICS

Item	E9415DI		
Thickness (μm)	38		
Exposure System	Collimated Light	LDI	LDI
Exposure Energy (mj/cm^2)	23	25 (i-line)*1	35 (h-line)*1
41 STOUFFER STEP HELD	22		
Minimum Developing Time x2 (sec)*2	45		
Adhesion (μm)*2	24	26	26
Resolution (μm)*2	36	34	34
Tent Breakdown*3 (via Φ 5.5 mm)	0		
Stripping Time (sec)*4	46		

*1: Test by **Orbotech Nuvogo800** *2: 50% BP, 28℃ *3: (Minimum Developing Time x2)x3 *4: 3% NaOH by dipping.

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ETERTEC® HT100TDI

SEMI -LDI

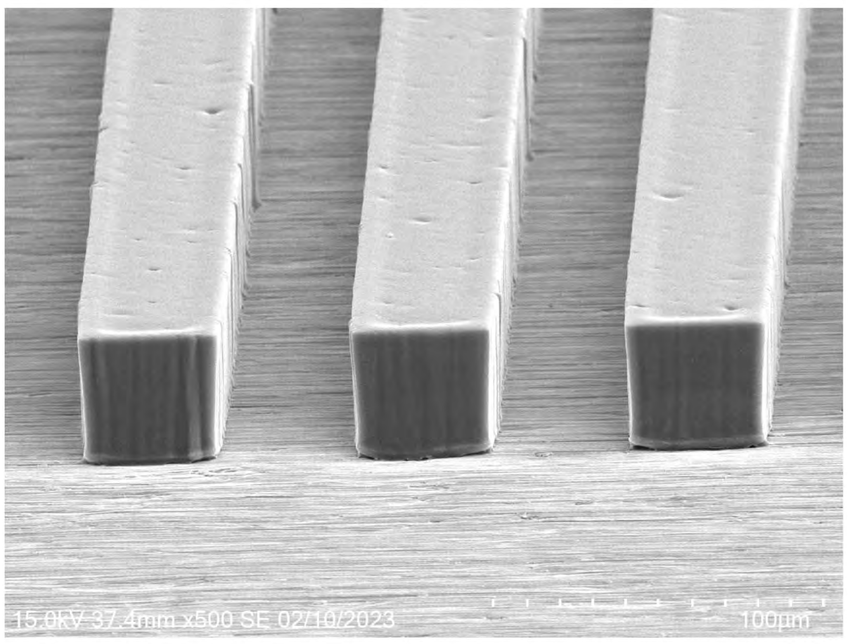
SEMI-LDI DRY FILM PHOTORESIST

FEATURES

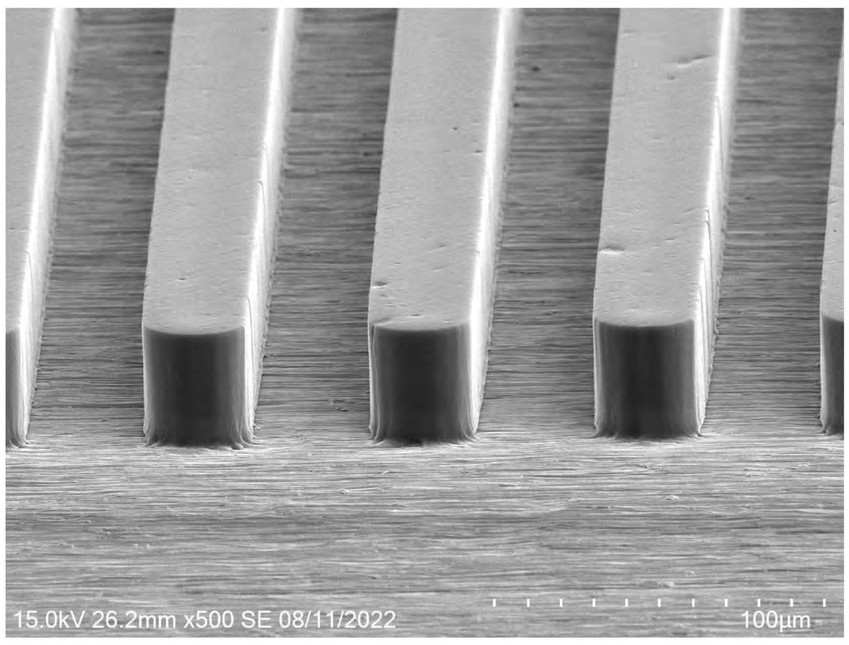
- Designed for UV laser and Collimated light applications
- For conventional exposure system and DI exposure machine
- Excellent tenting ability
- Excellent high resolution and adhesion

特性

- 針對同時使用於傳統曝光與雷射曝光製程設計
- 適用傳統曝光與DI曝光機
- 優良蓋孔能力
- 優良線路解析度及附著力



HT115TDI L/S= 40 µm / 40 µm
Collimated Light



HT115TDI L/S= 34 µm / 34 µm
h-line

CHARACTERISTICS

Item	HT115TDI	
Thickness (µm)	38	
Exposure System	Collimated Light	LDI
Exposure Energy (mj/cm^2)	18	30 (h-line)
41 STOUFFER STEP HELD	22	22
Minimum Developing Time x2 (sec)*2	50	
Adhesion (µm)*2	40	26
Resolution (µm)*2	40	34
Tent Breakdown (via Φ 5.5 mm)	0	
Stripping Break Time (sec)*3	43	

*1: Test by h-line DI machine *2: 50% BP, 28℃ *3: 3% NaOH by dipping.

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Photoresist Materials Division

ETERTEC® HT200F

SEMI -LDI

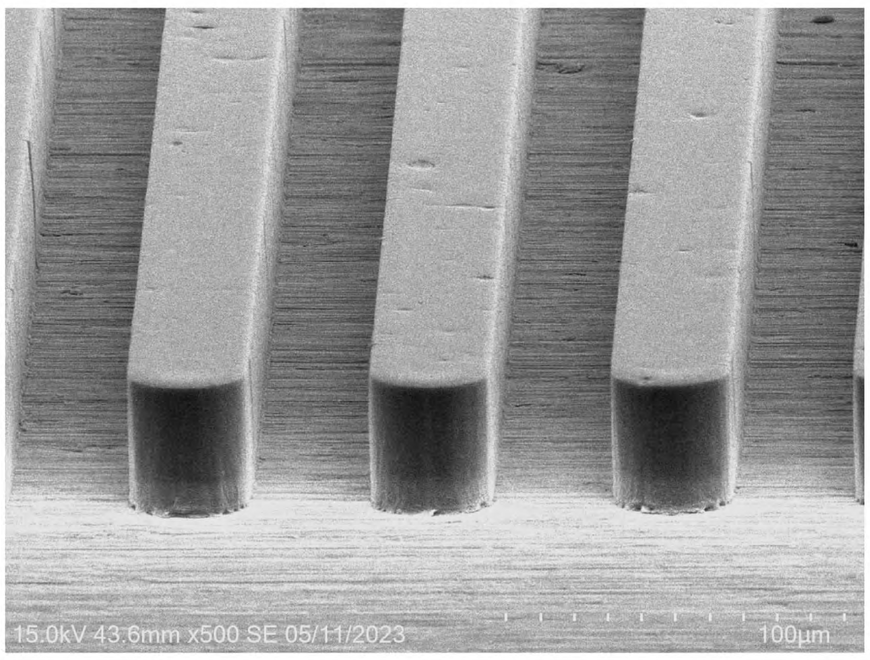
SEMI-LDI DRY FILM PHOTORESIST

FEATURES

- For conventional / direct imaging exposure application
- Excellent tenting ability
- Excellent resolution and adhesion
- Low developing foaming
- Good contrast after exposure

特性

- 適用傳統與雷射曝光製程
- 蓋孔能力優異
- 優良線路解析度及附著力
- 顯影泡沫低
- 曝光後對比佳



HT215F 22/41sst L/S=34 µm/34 µm

CHARACTERISTICS

Item	HT215F	
Thickness (µm)	38	
Exposure System	DI / LDI	Collimated Light
Exposure Energy (mj/cm^2)*1	70	30
41 STOUFFER STEP HELD	22	22
Minimum Developing Time x2 (sec)*2	56	
Adhesion (µm)*2	26	26
Resolution (µm)*2	34	32
Tent Breakdown (via Φ 5.5 mm)	0	0
Stripping Break Time (sec)*3	48	

*1: Test by h-line DI & ORC collimated light exposure machine *2: BP 50%, 28℃ *3: 3% NaOH by dipping.

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Photoresist Materials Division

ETERTEC® UDF3200F HDI

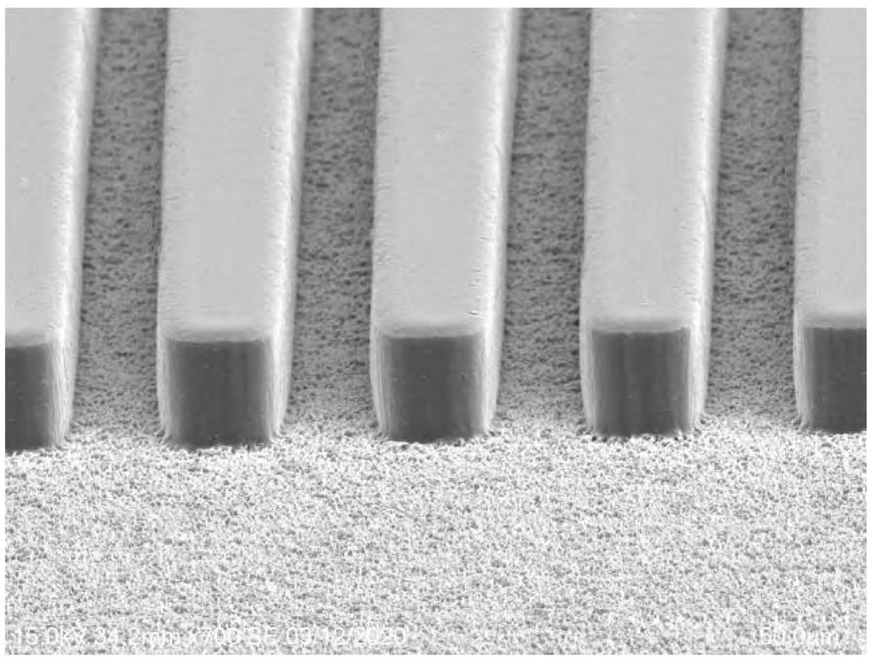
LDI DRY FILM PHOTORESIST

FEATURES

- Designed for UV laser direct imaging applications
- For i-line and h-line
- Excellent tenting ability
- Excellent high resolution and adhesion

特性

- 針對雷射曝光製程設計
- 適用**i-line**與**h-line**波長
- 優良蓋孔能力
- 優良線路解析度及附著力



UDF3230F L/S=22 μm/22 μm (h-line)

CHARACTERISTICS

Item	UDF3230F	
Thickness (μm)	29	
Wavelength	i-line	h-line
Exposure Energy (mj/cm^2) *1	11	13
41 STOUFFER STEP HELD	19	19
Minimum Developing Time x2 (sec)*2	33	33
Adhesion (μm)*2	24	20
Resolution (μm)*2	24	22
Stripping Break Time (sec)*3	37	
Tent Breakdown	0 (Φ 4mm)	

*1: Test by **Orbotech Nuvogo800** *2: 50% BP, 28℃ *3: 3% NaOH, 50℃

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ETERNAL MATERIALS

Photoresist Materials Division

ETERTEC® UDF3100F HDI

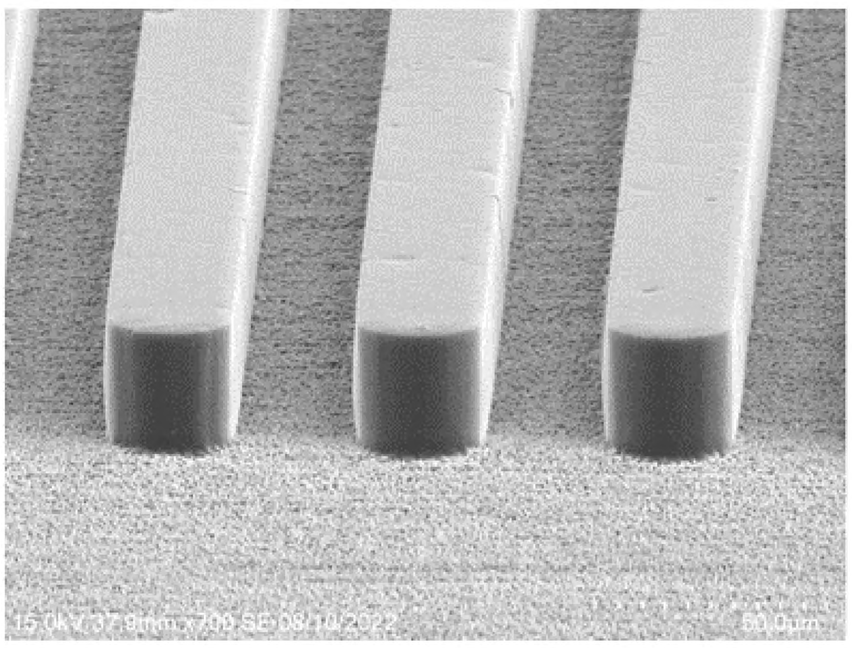
LDI DRY FILM PHOTORESIST

FEATURES

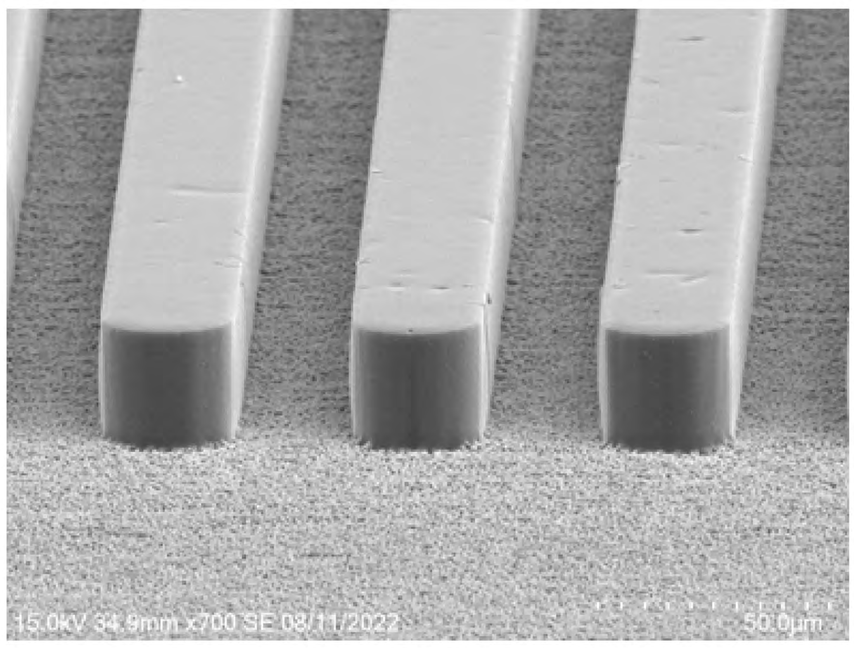
- Designed for UV laser direct imaging applications
- For i-line and h-line
- Excellent tenting ability
- Excellent high resolution and adhesion

特性

- 針對雷射曝光製程設計
- 適用 i-line & h-line波長
- 優良蓋孔能力
- 優良線路解析度及附著力



UDF3127F 19/41sst L/S=24 μm/24 μm



UDF3127F 22/41sst L/S=22 μm/22 μm

CHARACTERISTICS

Item	UDF3127F	
Thickness (μm)	27	
Wavelength	h-line	
Exposure Energy (mj/cm^2) *1	9	12
41 STOUFFER STEP HELD	19	22
Minimum Developing Time x2 (sec) *2	36	
Adhesion (μm) *2	24	22
Resolution (μm) *2	24	22

*1: Test by **ADTEC** (h-line) *2: 50% BP, 28℃

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Photoresist Materials Division

ETERTEC® APR500

FPC

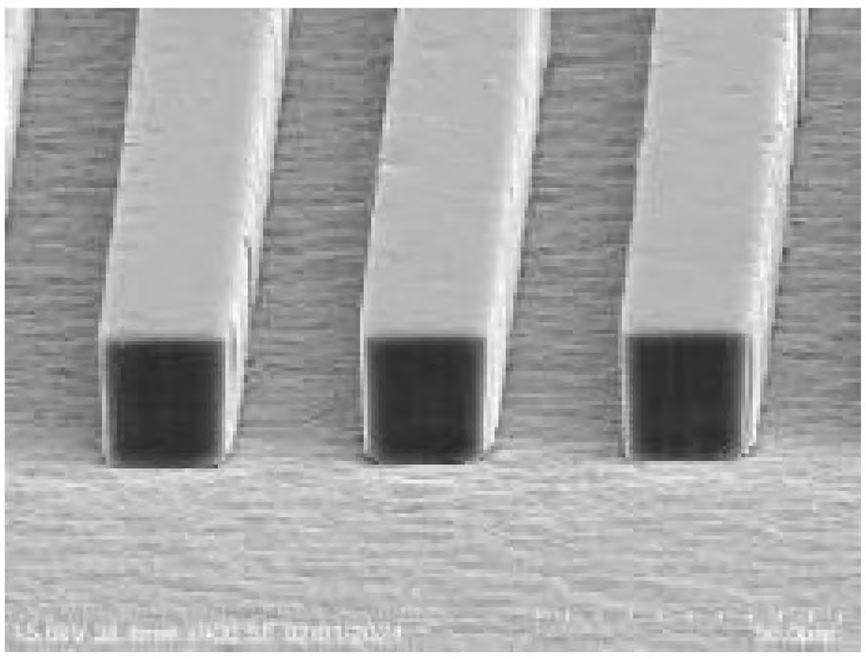
DRY FILM PHOTORESIST

FEATURES

- Designed for FPC applications
- Excellent tent ability & flexibility
- Excellent high resolution and adhesion
- Easily stripping/ break flake size

特性

- 針對FPC製程設計
- 優良蓋孔能力和撓折性
- 優良線路解析度及附著力
- 去膜容易/膜屑小



APR508 16/41sst L/S=16 μm/16 μm

CHARACTERISTICS

Item	APR508	
Thickness (μm)	20	
Exposure Energy (mj/cm^2) *1	21	29
41 STOUFFER STEP HELD	13	16
Minimum Developing Time x2 (sec)*2	25	
Adhesion (μm)*2	14	12
Resolution (μm)*2	14	16
Stripping Break Time (sec)*3	13	

*1: Test by **ORC EXM-1201F 5KW** *2: 50% BP, 28℃ *3: 3% $NaOH_{(aq)}$, 50℃ by dipping

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ETERNAL MATERIALS

Photoresist Materials Division

LAMINAR® E7700M

ENIG

DRY FILM PHOTORESIST

FEATURES

- Excellent resistance to **ENIG**
- Excellent resistance to **Alkaline etching**
- Excellent tenting ability
- High resolution
- Low developing foaming

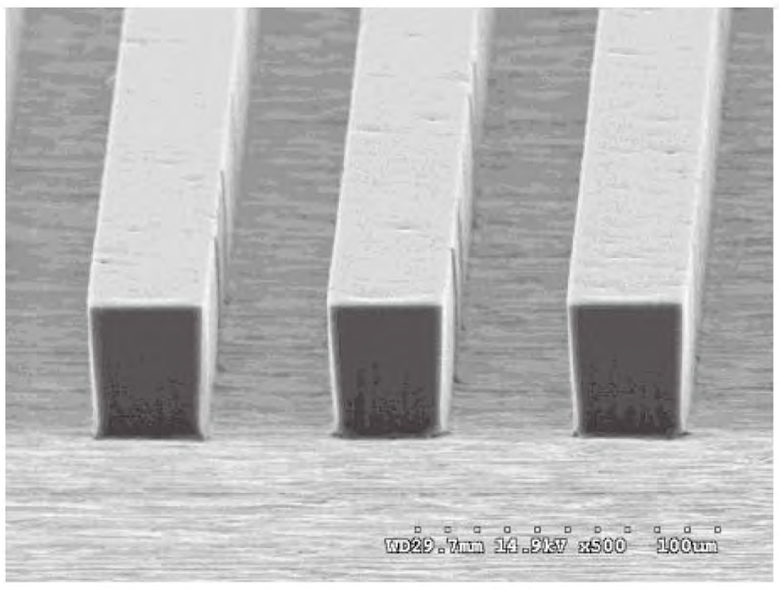
特性

- 對化鎳浸金製程具優良抗化性
- 對鹼性蝕刻製程具優良抗化性
- 蓋孔能力佳
- 線路解析力高
- 顯影泡沫低

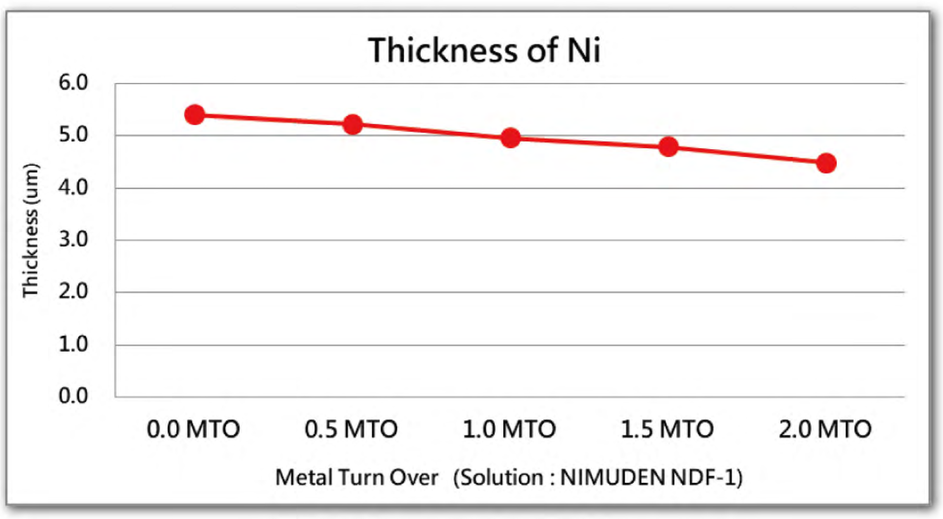
CHARACTERISTICS

Item		E7720M
Thickness (μm)		49
Exposure Energy (mj/cm^2)		80
41 STOUFFER STEP HELD		22
Minimum Developing Time x2 (sec)*1		54
Adhesion (μm)*1		22
Resolution (μm)*1		36
Tent Breakdown (via Φ 5.5 mm)		0
Stripping Break Time (sec) *2	On Copper	59
	On Solder Mask	57

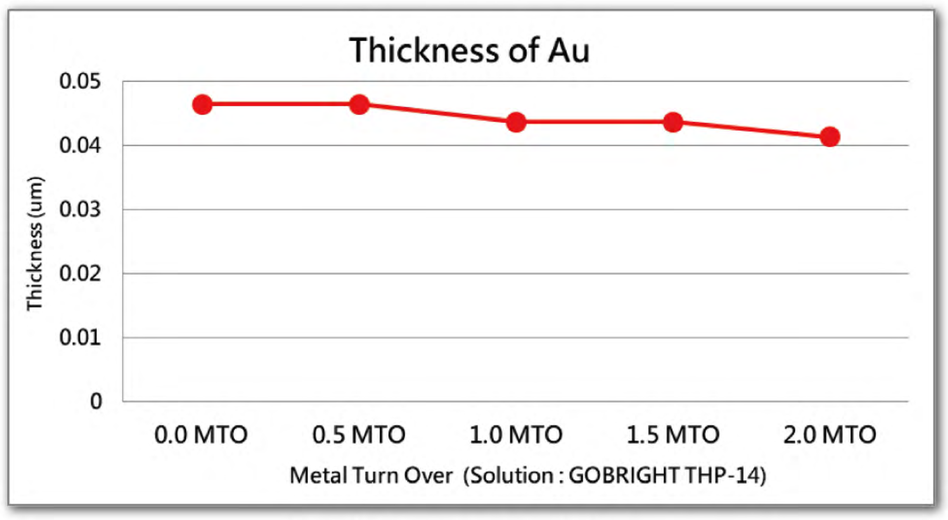
*1: 50% BP, 28℃ *2: 3% NaOH by dipping.



E7720M L/S=40 μm /40 μm



Thickness of Ni



Thickness of Au

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Photoresist Materials Division

ETERTEC® HQ6300

Gold Plating

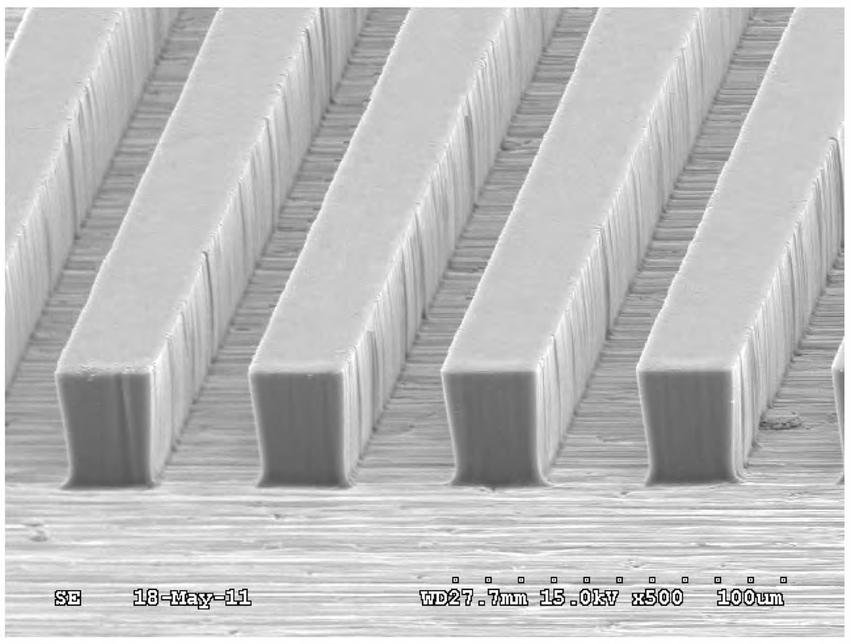
DRY FILM PHOTORESIST

FEATURES

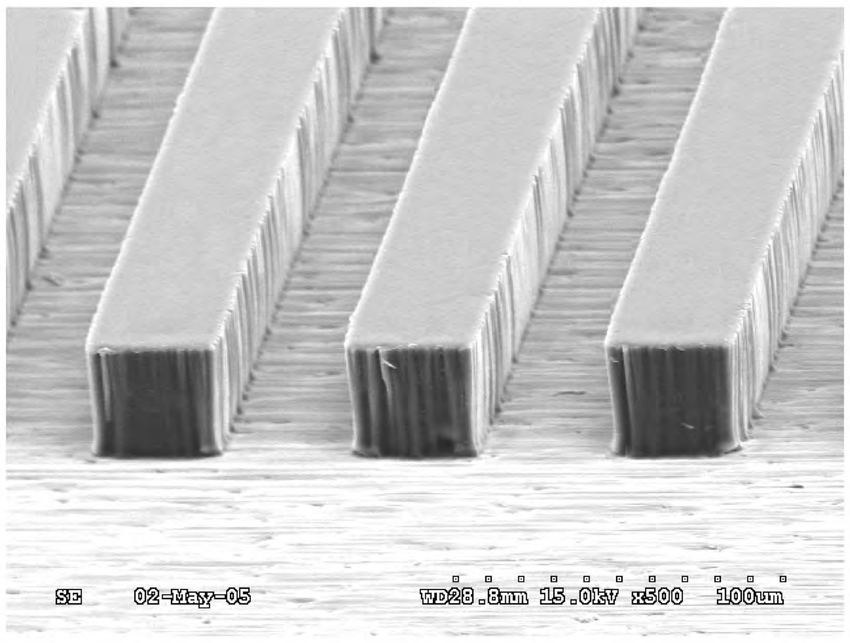
- Excellent resistance to **gold plating** applications
- High resolution
- Excellent adhesion
- Easily stripping and filterable
- Broad processing latitude in each step

特徵

- 抗鍍金能力優
- 線路解析度高
- 線路附著力優
- 去膜容易，膜屑易過濾
- 操作寬度大



HQ6315 22/41sst L/S=30 μm/30 μm



HQ6320 22/41sst L/S=40 μm/40 μm

CHARACTERISTICS

Item		HQ6315	HQ6320
Thickness (μm)		38	49
Exposure Energy (mj/cm^2)		51	74
41 STOUFFER STEP HELD		22	22
Minimum Developing Time x2 (sec)*1		62	79
Adhesion (μm)*1		24	28
Resolution (μm)*1		28	30
Stripping (sec)*2	Time	41	67
	Flake Size	Break Sheet	Break Sheet
Au Plating*3	Plating Time (min)	10	15
	Theoretical Au Thickness (μinch)	110	165

*1: 50% BP, 28℃ *2: 3% NaOH by dipping *3: [Au^+]=2g/L, 0.45 ASD

長興材料
ETERNAL MATERIALS

Photoresist Materials Division

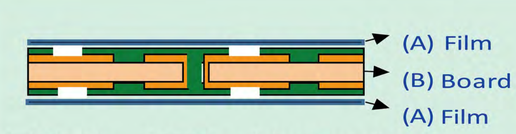
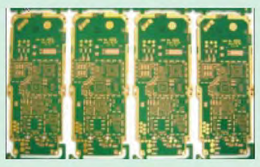
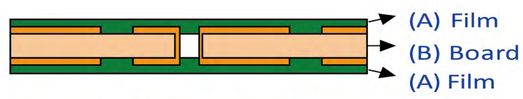
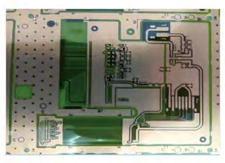
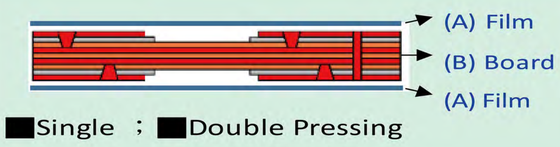
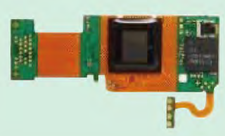
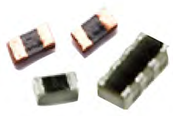
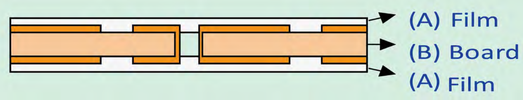
真空壓膜機
EFV-1000 VACUUM LAMINATOR

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

日本Nikko-Materials Co., Ltd. 設計

Applications 應用

Market	Process	Structure	Materials	Products
PCB/ FPC/ IC substrate	Selective Gold(OSP) Process	 □Single ; ■Double Pressing	(A) Dry film (Dupont W250/...) (B) PCB/FPC/IC substrate Thickness : 0.2 ～ 2mm	
FPC	PIC Process (Coverlay+Solder Mask)	 □Single ; ■Double Pressing	(A) PIC film (Eternal/PR82XXX,EPD33XX) (B) FPC Thickness : 0.1～1 mm	
PCB/FPC	Rigid-Flex HDI Process or DF Solder Mask Process	 ■Single ; ■Double Pressing	(A) Dry film (B) Rigid-Flex Thickness : 0.2～2 mm	
IC/Passive Components	Dry film/DF Solder Mask Process	 ■Single ; ■Double Pressing	(A) Dry film (B) Substrate Thickness : 0.3～1 mm	
Mini-LED Micro-LED	Backlight for Mini-LED or Othes Film	 □Single ; ■Double Pressing	(A) DFSM or Others Film (B) PCB/FPC or Display Thickness : 0.3～2 mm	

- 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

長興材料
ETERNAL MATERIALS

長廣精機
ETERNAL PRECISION MECHANICS

日興材料 真空壓膜機
Nikko-Materials' Vacuum Laminators

氣囊式真空壓膜機產品系列

Diaphragm Type Vacuum Laminator Line-Up

Type	Model	1st Stage	2nd Stage	Applicable Work-Size(mm)
Auto	CV-300	Diaphragm	-	610 x 610
	CV-300T	Diaphragm	-	350 x 350 (Option 400 x 400)
	CVP-300	Diaphragm	Flattening Press	510 x 510 (Option 510 x 610)
	CVP-300T	Diaphragm	Flattening Press	350 x 350 (Option 400 x 400)
	CVP-500	Diaphragm	Flattening Vacuum Press	510 x 510 (Option 510 x 610)
Manual	V-130	Diaphragm	-	350 x 350 (Option 400 x 400)
	V-160	Diaphragm	-	610 x 610

Auto type / CV-300

Auto type / CVP-300

Manual type / V-160

橡膠壓台式真空壓膜機產品系列

Rubber Press Type Vacuum Laminator Line-Up

Type	Model	1st Stage (Vacuum Laminator)	2nd Stage (Flattening)	Applicable Work-Size(mm)
Auto	CV-600/700	Rubber Press	-	510 x 510 (Option 510 x 610)
	CV-600T/700T	Rubber Press	-	350 x 350
	CVP-600	Rubber Press	Flattening Press	510 x 510 (Option 510 x 610)
	CVP-600T	Rubber Press	Flattening Press	350 x 350
	CVP-700	Rubber Press	Flattening Vacuum Press	510 x 510 (Option 510 x 610)

Auto type / CVP-600

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