

DAXiN

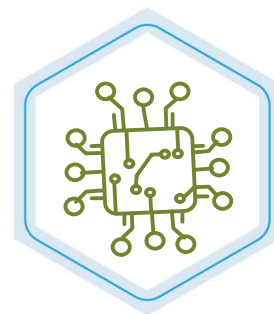
A Materials Design House And More





Materials Corporation

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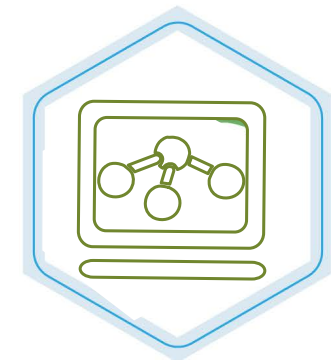
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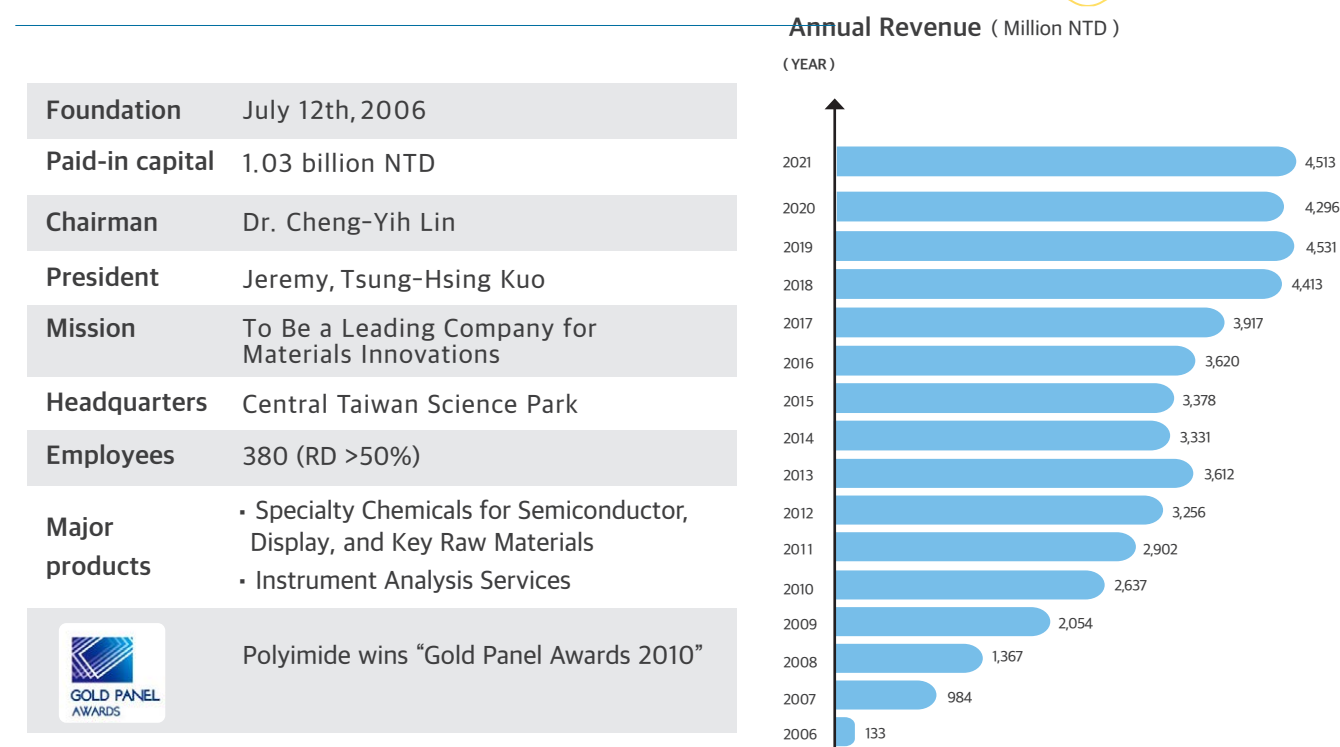
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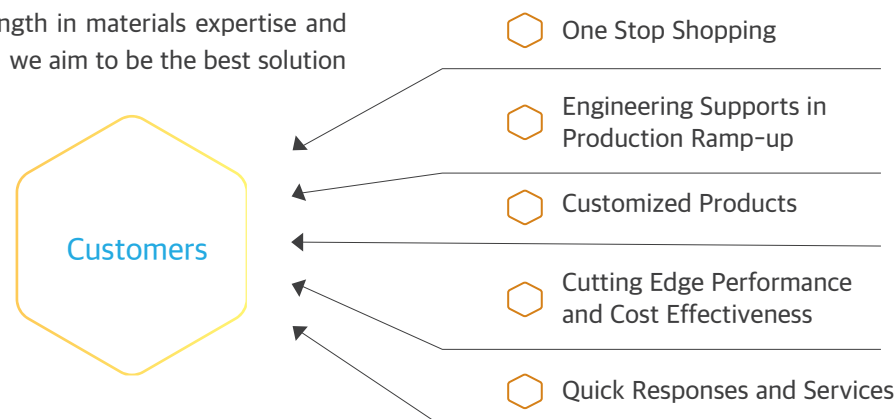
About DAXIN

Founded in 2006, DAXIN Materials Corporation started with the aim of being the Material Design House. Since we have always strived to deliver best solutions that meet our customers' needs, our corporation has constantly developed customized products from wet chemicals and functionalized materials to polymer solutions. With our expertise and capabilities related to material design, we have consistently offered innovative and value-added solutions for our customers. DAXIN Materials Corporation is now listed on the Taiwan Stock Exchange under ticker number 5234.



Best Solution Provider for Customized Products

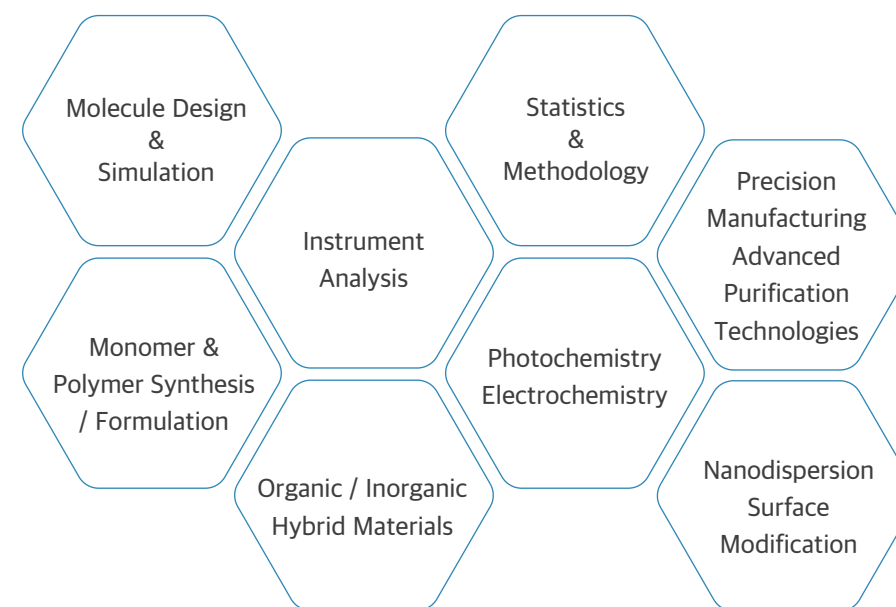
To contribute to our customers' success, we always keep close relationships with clients to design products as desired. Combining our strength in materials expertise and strong manufacturing ability, we aim to be the best solution provider worldwide.



Research & Development

Core Technologies and Product Development

All the innovations are the extension of fundamental science. From the basic photochemistry to color simulation, molecular simulation, dispersion science, surface chemistry, organic and inorganic hybrid materials design, monomer & polymer synthesis/formulation, and precision manufacturing and advanced purification technologies, Daxin links all these technologies to provide superior and customer-oriented products in different Semiconductor and Liquid Crystal Display (LCD) fields.



Consistent Innovation & Intellectual Property Protection

To defend our innovation and ensure the right for production, we are working to improve intellectual property protection and enforcement for our company in markets around the globe. Our patents include all ranges: from specific chemical formula, better solution to current technology, to the improvements of products. Until 2021 the approved patent license number was more than 281, the application number was more than 418. With intellectual property protection, it gives us exclusive right granted for invention and protects our corporate value in the market.

Semiconductor Materials

Photosensitive Dielectric/Passivation

Dielectric for Redistribution Layer

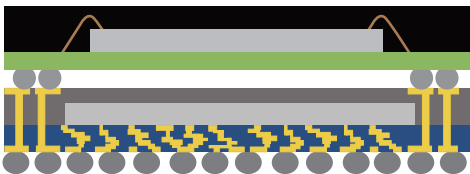
Applications

Varnish-type photosensitive dielectrics for the advanced chip packaging (WLP/PLP) are designed, which could be spin or slit-coated into thin film on the substrate and is photosensitive, able to be patterned into multi-layer redistribution layer (RDL). Low curing temperature, excellent Cu adhesion and electric properties are achieved for the varying chip applications.

Multi-chip Fan-Out Package



Fan-Out PoP



Features of General Type

- Low temperature curing
- Excellent Cu adhesion
- Low CTE
- High resolution
- Excellent chemical resistance

Features of Low Dk/Df Type

- Low temperature curing
- Low Dk/Df
- High resolution
- Excellent chemical resistance

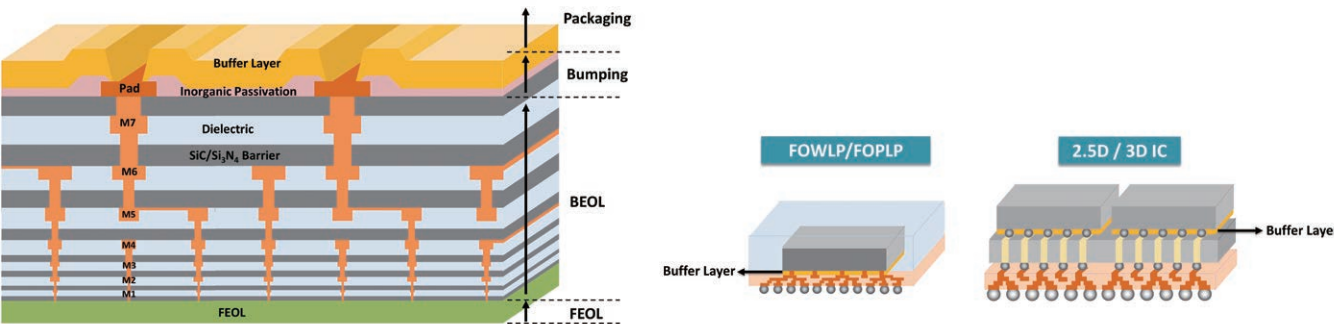
Specifications

Product Name		RDLT series			RPH series
Features		Negative-type Low curing temperature PSPI	Negative-type Low Df PSPI	Positive-type PSPBO	
Non-Volatile Matter Content	%	~40	~40	~40	~25
Curing Temperature	°C	230	180	230	250
UV dosage (i/g/h line)	mJ/cm ²	230~300	230~300	200~250	150
Young's Modulus	GPa	2.13	2.04	2.03	1.9
Elongation (RT)	%	50	40	60	12
Tg	°C	230	200	208	269
CTE (50~100°C)	ppm/ K	48.5	48.1	60.4	40.1
Dk/Df (1 GHz)	-	3.45/ 0.024	3.35/ 0.022	3.06/0.0072	3.01/ 0.020
Reliability * HTS 175°C 168hr * HAST 96hr * TST 200 cycles	-	5B	5B	5B	5B

Buffer Layer

Applications

Daxin's photosensitive dielectrics, which possess excellent mechanical properties and thermal stability, can be used as buffer layers for the front-end wafer process. Buffer layers can protect low K dielectric layer from stress induced by package processes and increase the reliability of ICs. Also, its high resolution can meet the requirements of low dimension connections and simplify the manufacturing, which can increase the yields and performances of products.



Features

- High resolution
- Excellent mechanical properties
- Excellent thermal stability
- Excellent Cu adhesion
- Low CTE

Specifications

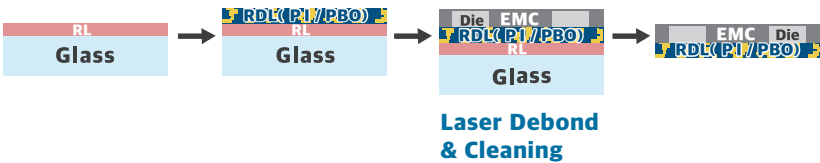
Product Name		HMPI series
Viscosity	cP	1000-3500
Non-Volatile Matter Content	%	10-40
Young's Modulus	GPa	4.0-5.0
Tensile strength (at break)	MPa	150-200
Elongation (at break)	%	20-40
CTE(50-175°C)	ppm/°C	20-35
Tg	°C	280-310
Td (5% weight loss)	°C	300-320
Shrinkage	%	30-50
Aspect ratio	-	0.8-1.2

Laser Release Layer

Multi-functional Release Layer

Applications

Temporary bonding of wafer to glass carrier has emerged as a viable method for various electronic device processing. Laser debonding enables the use of laser release layer (RL) that can withstand high temperatures above 300°C. The processed devices are finally debonded and separated from the carriers easily.



Features

- Excellent thermal resistance and stability over 300° C
- Easily stripped by laser
- Applicable under various laser wavelength (308/355/532/1064nm) with high absorption
- Optical alignment (Tunable IR absorption or transmittance)

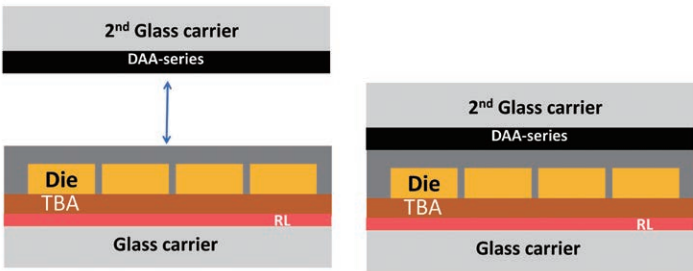
Specifications

Product Name			LRA-2 series	Remarks
Field of Applications			Semiconductor	
Features			High laser absorption efficiency IR absorption	
Varnish	Non-Volatile Matter Content	wt%	10	Customized
	Viscosity	cP	100~200	Customized
Process Conditions	Coating Method	-	Slit or Spin	
	Pre-bake	°C ; min	90 ; 10	
	Post-bake	°C ; min	250 ; 30	
Thermal Properties	Td (1% Loss)	°C	~300	TGA
Optical Properties	Transmittance	%	< 2	1 μm
	b*	-	> 2	
Chemical Resistance	Stripper Aqua Regia Metal Etchant	-	No damage	

Release Layer For Transfer Bonding

Applications

It is used in temporary bonding & debonding process for wafer/panel level packaging (WLP/PLP). It offers stable adhesion through subsequently physical or chemical processes. It can be debonded by laser easily.



Specifications

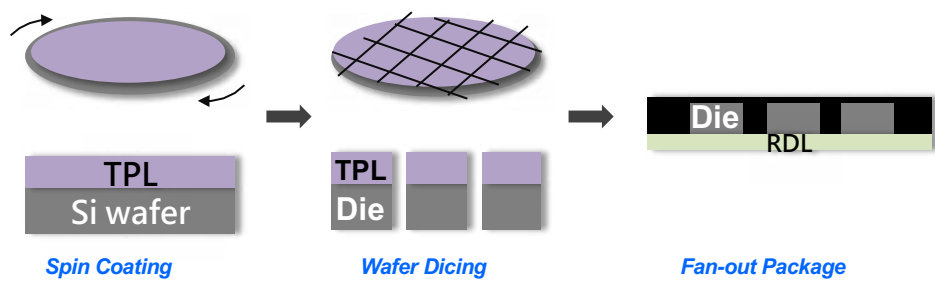
Product Name			DAA-series	Remarks
Film Thickness		μm	5-35	
Process Conditions	Pre-bake	°C ; min	50 ; 5 90 ; 5 150 ; 30	
	Bonding Temperature	°C	150-180	
	Bonding Pressure	kg/cm ²	5	
	Bonding Time	min	5	
	Post-bake	°C ; min	230 ; 30	
Adhesion		N/mm ²	2	Pull test @glass
Thermal Properties	CTE	ppm/°C	7-8	40-70°C
	Td (5% weight loss)	°C	290	By TGA
Chemical Resistance	Cross-Cut Test	-	5B	@Glass Stripper, 80°C, 10min
Laser Debond Wavelength		nm	355-1064	
Cleaning Method			Plasma	

Protection Materials

Temporary Protection Layer

Applications

Temporary Protection Layer is applicable in die singulation process, to protect device surface by spin-coating on the wafer, capable of avoiding die chipping or defects during wafer dicing and grinding. Complete removal of Temporary Protection Layer is achieved by wet cleaning after process.



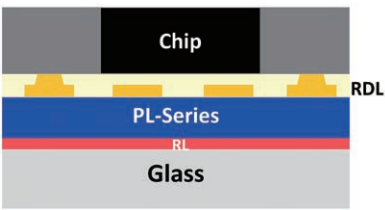
Specifications

Product Name			TPL-series
Field of Applications			Advanced Packaging
Varnish	Viscosity	cP	1000~5000
	Non-Volatile Matter Content	%	10~40
Process Conditions	Coating Method	-	Spin/Slit
	Pre-bake	°C ; min	90; 10
	Post-bake	°C ; min	230 ; 30
Thermal Properties	Tg	°C	250
Mechanical Properties	Modulus	GPa	3
	CTE	ppm/k	65

Passivation Layer

Applications

Passivation layer is used as an effective strategy to protect the active semiconductor surface from the impact by the surrounding environment. Moreover, the feasibility of laser patterning can be retained.



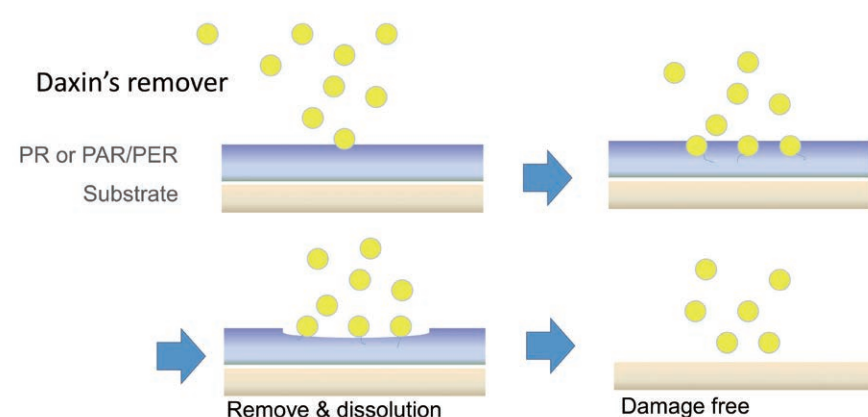
Specifications

Product Name		PL series
Appearance	-	Transparent / Black
Non-Volatile Matter Content	%	10-20
Curing Temperature	°C	230
Young' s Modulus	GPa	2-4
Elongation (RT)	%	50-60
Tg	°C	230-250
Td 5% Weight Loss	°C	>400
CTE (50~100°C)	ppm/k	30-50

High-Purity Specialty Chemicals for Wet Clean Process

Strippers/ Removers

Daxin's formulated strippers and removers are designed for effective removal of photoresist (PR) or post etching/ashing residues (PERs/PARs) with high protection and compatibility to metal or silicon congaing substrate, which are applicable in advanced IC process.



Features

- Effective removability of thick resist
- Effective removability of PERs/PARs
- Low metal etching rate
- Non-NMP/DMSO solvent system
- High flash point
- High purity (metal ions<1ppb)

Selective Etchants

The specifications and purity of wet chemicals are continuously increasing due to the more advanced processes. Daxin provides a variety of solutions for different etch selectivities between materials. Customized services for formulation optimization are also available.

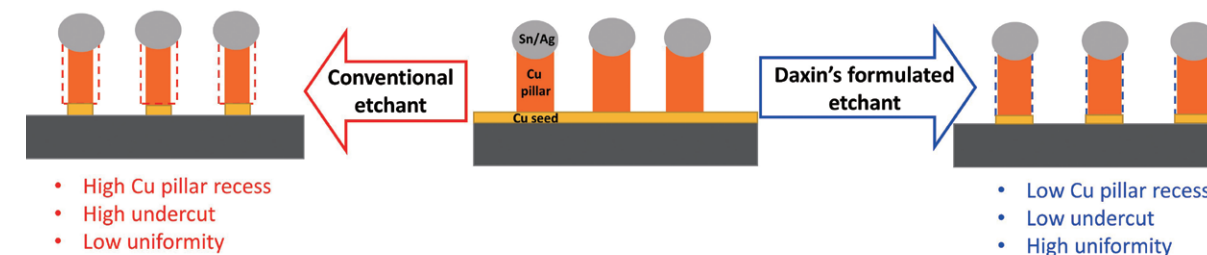
Cu Seed Etchant

Applications

Daxin's formulated Cu seed etchant is designed for the wet clean process in semiconductor advanced packaging and possesses various advantageous properties for the fine pitch process:

- High etch selectivity between sputtered and electroplated copper
- Low undercut
- High uniformity
- Low etch rate to tin and silver

Daxin's Cu seed etchant can demonstrate high copper loading and low operation temperature for the reclaim mode process. Without environmentally hazardous substances, not only the process cost but also chemical waste can be reduced.



High-Purity Specialty Chemicals for Nanolithography

High-Purity Solvent

With advanced purification technologies, Daxin provides high purity solvent which can be used in the semiconductor/display industries and fulfills the needs of low metal ions and low particle content.

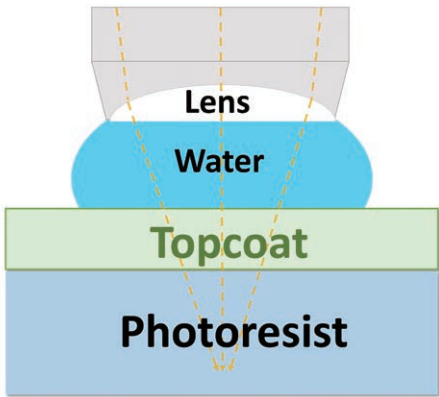
Topcoat

Applications

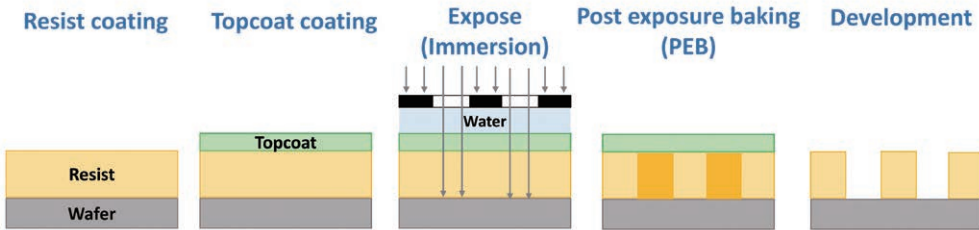
Daxin provides topcoat materials for immersion lithography, which can prevent photoresist from composition change due to substances dissolving into liquid (ex: water). In addition, topcoat materials can be used for refractive index adjustment. A variety of specialty chemicals for nanolithography process are under development.

Features

- Good water-repellent
- Good dissolution in developer
- No intermixing and dissolution with photoresist



Process Flow



Display Materials

LCD Materials

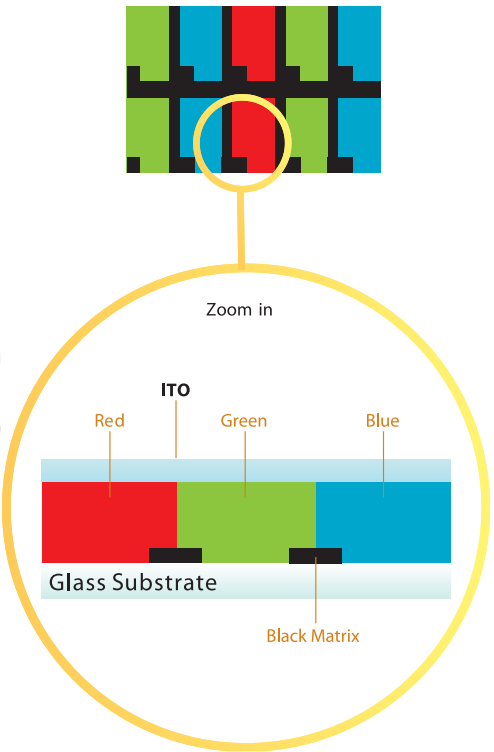
Black Matrix Resist

Applications

Black matrix is arranged in the form of stripes, grids or mosaics between color patterns of RGB in color filter for LCD panel. This product is designed for high light-shielding properties to increase the contrast ratio of LCD panel.

Features

- High optical density
- High coating uniformity, high sensitivity, excellent adhesion, excellent developing performance
- Excellent reliability in heat, light, and chemical resistance with good shelf-life
- New: Black matrix resist for LCD panel with high resolution



Specifications



Product Name		ABK406X	ABK408X	Remarks
Field of Applications		Full High Definition	Ultra High Definition	
Features		Standard	High Resolution High Resistance	
Viscosity	cP	3.0 ± 0.5	3.0 ± 0.5	
Non-Volatile Matter Content	%	13 ~ 15	13 ~ 15	
Line Width	μm	6~ 30	4 ~ 8	
Remaining Film Thickness	%	75 ~ 85	75 ~ 85	After PB/ Before PB (PB: 230°C x 20min)
Process Conditions				
Soft-Bake	°C; sec	70 ~ 120 ; 90	70 ~ 120 ; 90	
Exposure Energy	mJ/cm ²	40 ~ 100	45 ~ 100	
Development		KOH / Buffer	KOH / Buffer	At 23°C ~ 25°C
Hard-Bake	°C; min	230; 20	230; 20	
Optical Density	1 / μm	4.5 ~ 4.0	4.0 ~ 3.0	
Surface Resistivity	Ω / □	1 x 10 ⁸	> 1 x 10 ¹⁴	
Chemical Resistance				
IPA	(OD Before -OD After) / μm	< 0.1	< 0.1	After 25°C Dip 5min +120°C x 2min
NMP				After 25°C Dip 5min + 240°C x 15min
γ-butyrolactone				
Weight Loss	%	< 3	< 3	After PB + 230°C x 60min by TGA
Pressure Cook Test		5B	5B	After PB + 230°C x 180min 121°C, 2 atm, RH 100% for 24hr by cross-cut test

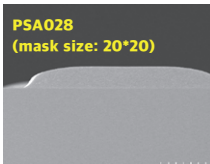
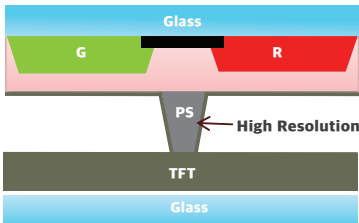
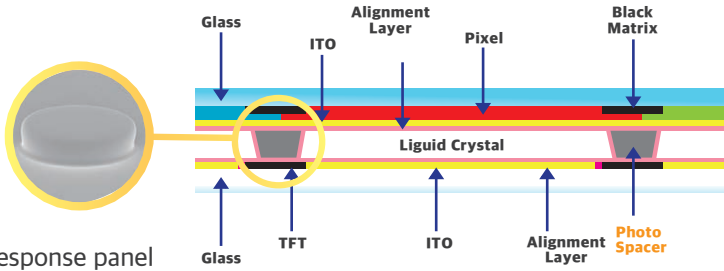
Photo Spacer

Applications

Via adjusting electric field between two glass substrates, the arrangement of liquid crystal materials can be controlled to make LCD exhibit expected pictures. Photo Spacer acts as a key component in TFT LCD which is used to maintain the cell gap's uniformity.

Features

- High sensitivity
- Good coatability
- High elastic recovery ratio
- Excellent mechanical properties
- New:
High resolution photo spacer for fast response panel
Applicable for ultra-high LCD cell thick panel



Specifications

Product Name			Normal PS	Low Cell Gap HPS	Ultra High PS
Field of Applications			TN/VA/PSA/COA	AFFS	3D display/electro-chromic glass
Features			• Widely used in different process conditions • Wide LC margin, Excellent pressure resistance	• Applicable in fast response high-resolution screens • Stable with low volatility	• High aspect ratio, thickness can be achieved to 45um • High taper angle
Physical Properties	Viscosity	(cP)	4.3±0.3	3.25±0.3	5.1±0.3
	Non-Volatile Matter Content	(%)	18.7±0.5	23.2±0.5	23.3±0.5
	Remanent	(%)	88.5±2	86±2	90±2
	Resolution	(μm)	10*10	5*5	20*20
	Height diff. between main & sub PS	(μm)	0.3~0.7	0.3~0.5	-
Optical Properties	(460 nm) Transmittance	(%)	> 96	> 96	> 96
	(540 nm) Transmittance	(%)	> 97	> 97	> 97
	Sensitivity	(mJ)	40~50	40~50	70
Mechanical Properties	Hardness		5H	8H	6H
	Recovery Ratio	(%)	> 88 (40 mN mask size: 20x20 μm)	> 80 (40 mN, mask size: 10x10 μm)	> 90 (50 mN mask size: 28x28 μm)
	Adhesion Test		5B	5B	5B
Electrical Properties	Dielectric Constant		3.7	3.7	3.7
	Voltage Holding Ratio	(%)	> 95	> 95	> 95
Chemical Resistance	Heat water/ KOH/ TMAH/ IPA/ GBL		Pass	Pass	Pass

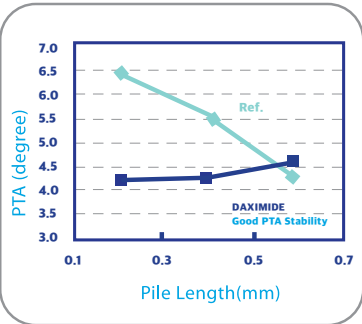
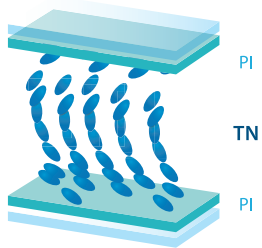
PI Alignment Layer

Applications

Polyimide layer is used to controlled the liquid crystal orientation and the pre-tilt angle. Daxin TN and VA mode alignment layers make LCD panels perform well and provide wide process margin for LCD manufactures.

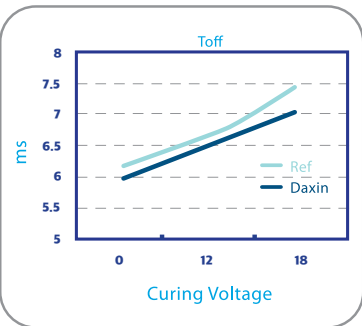
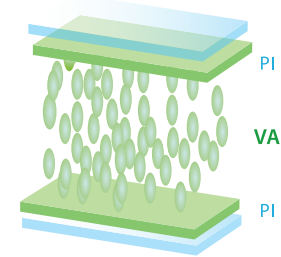
Features

- Free image sticking
- Rubbing mura/ particle free
- Stable pretile angle
- Excellent reliability after high temperature/ humidity



VA-PI

- Image sticking free
- High VHR and excellent reliability
- Stable pretilt angle
- Drop mura free
- Excellent adhesion
- Excellent coating properties



Specifications

Product Name		RA-706X	RA-900X	Remarks
Field of Applications		TN-LCD	PSA-LCD	
Features		1. Improvement for Alignment Force 2. No Image Sticking 3. APR & Inkjet Printing 4. Excellent Printing Performance and Rubbing Endurance	1. Drop Mura Free 2. No Image Sticking 3. APR & Inkjet Printing 4. Excellent Printing Performance and Electric Properties	
Viscosity	cP	22~30	6~25	
Non-Volatile Matter Content	%	5.5~6.5	3.0~7.0	
Water Content	ppm	<2000	<2000	
Ionic Impurities Content	ppb	< 500 (Na, K, Cu, Fe)	< 500 (Na, K, Cu, Fe)	
Process Conditions				
Soft-Bake		°C : min	65~70 : 2	70~90 : 2
Hard-Bake		°C : min	220 : 17~25	210~230 :15~60
Pretilt Angle	°	3~6	88~90	
Voltage Holding Ratio, VHR	%	> 96	> 90	1V, 0.6Hz, 60°C
Ion Density	pC	< 200	< 1000	Instec (10V, 0.01Hz, 60°C)
Residue DC	mV	< 800	< 100	Soaking 5V _{DC} , 3600sec, 60°C
Volume Resistivity	Ω . cm	10 ¹¹ ~10 ¹³	10 ¹¹ ~10 ¹³	10KHz

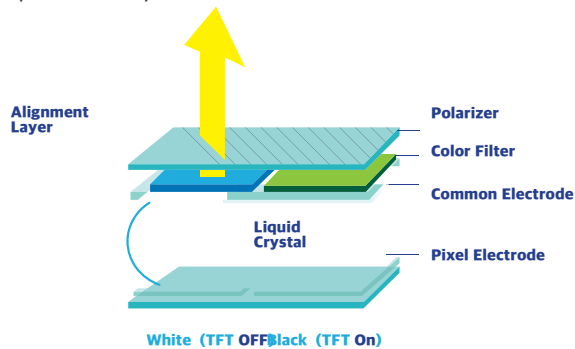
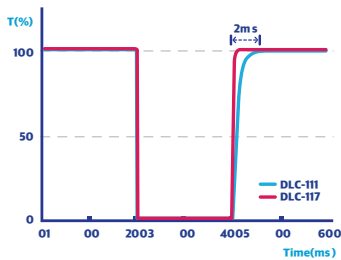
Liquid Crystal

Applications

Liquid crystals are fluid phase of matter which possess orientational ordering. Hence, liquid crystals are anisotropic fluid and could be re-oriented along the direction of the applied electric field, thus controlling light to or not to pass through two-crossed polarizers. In addition, self-alignment liquid crystals have been developed, which are more transparent and environmentally friendly, and is an important technology for the next generation LCD.

Features

- High stability to UV and heat
 - Wide operating temperature
 - Low threshold voltage and low electrical power consumption
- Fast response time, and image sticking solution
 - Excellent contrast ratio and good image quality
 - Self-alignment liquid crystal: suitable for narrow bezel, bezel-less, and curved LCD



Specifications

Product Name		LC-23	LC-26	LC-261	LC-47
Field of Applications		FFS Monitor	FFS Laptop	FFS Car Display	PSA TV
Features		Gaming	Gaming	Wide Temperature	Self-alignment
Volume Resistivity	$\Omega \cdot \text{cm}$	$>10^{14}$	$>10^{14}$	$>10^{14}$	$>10^{14}$
Clearing Point	$^{\circ}\text{C}$	80	75	104	75
Optical Anisotropy, Δn (At 25 $^{\circ}\text{C}$, 589nm)		0.136	0.120	0.119	0.097
Dielectric Anisotropy, $\Delta \epsilon$ (At 25 $^{\circ}\text{C}$, 1KHz)		2.5	4.0	3.5	-3.2
V10	V	2.9	2.41	2.49	2.75
V90	V	5.8	5.2	5.03	4.60
LTS	$^{\circ}\text{C}$	-20	-20	-40	-20
Response Time	msec	7~8	7~8	14~15	15~16
cell gap	μm	2.6	2.8	3.1	3.3

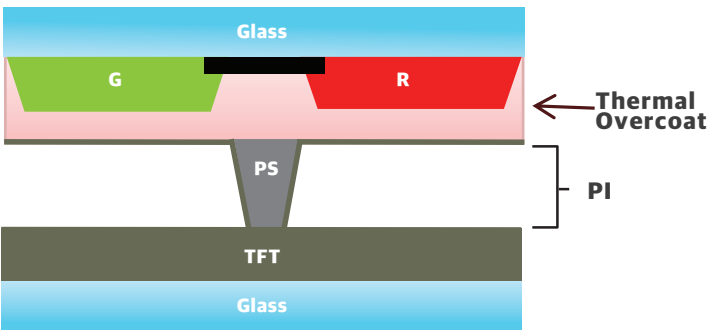
Thermal Overcoat

Applications

Thermal overcoat is applied to IPS-like panel and acts a transparent planarization layer on Color resists (RGB) and Black matrix (BM), protecting color filter and providing flat surface to ensure subsequent process uniformity.

Features

- High transparency
- Excellent planarization ability
- Good heat and chemical resistivity
- Low UV transmittance, which protect RGB from UV damage
- High crosslink ratio



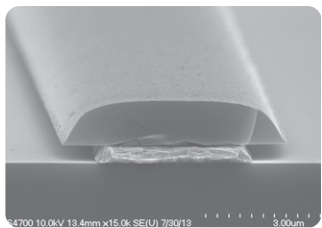
Specifications

Product Name		DTCVS		DT0CV6	Remark
Field of Applications		IPS model with Photo Alignment PI		IPS model with Rubbing type PI	
Features		high hardness good chemical resistivity		excellent planarization ability	
Basic Properties	Flatness (OC THK=1.6 μm)	μm	0.37	0.25	Max-Min (ΔHx)
	Remanent	μm	0.17	0.10	ΔRGB
	Adhesion (on glass)	%	97.6%	92.3%	230 $^{\circ}\text{C}$ /30Min
Mechanical Properties	Pencil Hardness	-	4~5B	5B	PCT121 $^{\circ}\text{C}$ /2atm/12hr
		-	6H	5H	@765g
Optical Properties	Transmittance	%	99.8	99.7	@400nm
		%	46.9	71.1	@313nm
		%	9.6	33.8	@254nm
Heat& Chemical Resistance	TGA weight loss	%	0.25	0.17	Water Absorption
		%	0.20	0.25	Out-gassing
	NMP elution test	-	0.000	0.002	OC on Red Resist@520nm

Cu/Mo Etchant

Features

- Hydrogen peroxide type is environmental friendly
 - Good stability for very high copper loading (> 10k ppm)
 - Good etching uniformity
- Good taper profile after etching.



Test Items	Unit	DE -series	Remarks
Max. Cu Loading	ppm	>10k	
Etching Rate	Å/min	4,000~6,000	35℃
pH value		3.7~4.4	
H ₂ O ₂ Concentration	%	6~8.5	
Taper	°	30~70	

Cu Stripper

Features

- Non-Corrosive to Cu, Mo, Al, ITO and IGZO
- Water compatible, favorable for post-clean process
- Regenerable and environmental friendly
- Low toxicity, no reproductive toxicity



Test Items	Unit	GD-series	Remarks
Appearance		Colorless to light yellow	
Density	g/cm ³	1.062~1.082	
pH value		11	15% aq.
Solubility		Soluble in water	
Operating Temp.	℃	40~50	

Touch Panel Materials

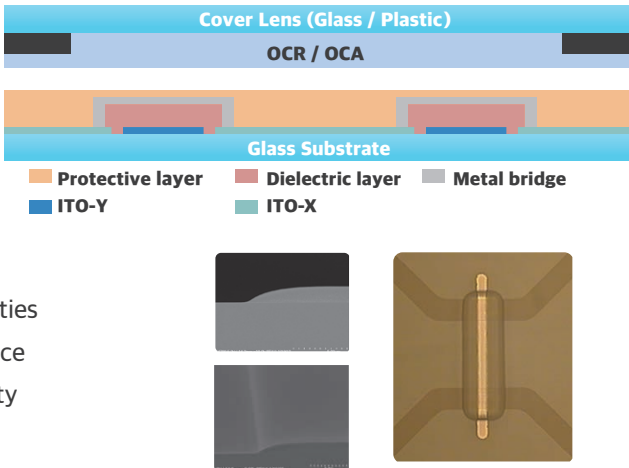
Photo Overcoat

Applications

Photo overcoat is applied in touch sensor a dielectric layer and a insulating layer. Photo overcoat contains good properties of insulation, adhesion, chemical resistance and hardness.

Features

- Optical properties: high transparency and good color hue
- Mechanical properties: good adhesion to bare glass, ITO and metal substrates; good hardness
- Electrical properties: excellent insulating properties
- Chemical properties: excellent chemical resistance
- Process window: easy to coat and high sensitivity



Specifications

Product Name		POCA	Remarks
Field of Applications		General POC	
		Slit & Spin Type	
Features		Spin or Spray Type	
Viscosity	cP	4 - 7±1	At 25℃, 60 rpm
Non-Volatile Matter Content	%	18 - 25±1	
Process Conditions			
Soft-Bake	℃ ; sec	90-110 ; 90	
Exposure Energy	mJ/cm ²	50-100	
Mask		Soda-lime & Quartz	
Development at 23℃		KOH	
Hard-Bake	℃ ; min	220-240 ; 30	
Transmittance at 400nm	%	> 95	UV visible (Carry 300)
Refractive Index at 633nm		1.51-1.52	MP100-M
Surface Resistivity	Ω/ □	1x10 ¹⁴	
Dielectric Constant		4.3	f=10 KHz, 1V
Hardness		3H	JIS pencil hardness
Shrinkage	%	88±2.0	250 °C* 60min
Remainder	%	85±3.0 (100mJ/cm ²)	THK ratio of before / after Hard-Bake
Chemical Resistance		5B	ASTM-D3359 After Aqua Regia / Al Acid / Oxalic Acid / 5% NaOH
HT/HH (65℃/90%, 240hrs)			
Adhesion on Glass		5B	ASTM-D3359
Adhesion on ITO			
Adhesion on Metal		4B	

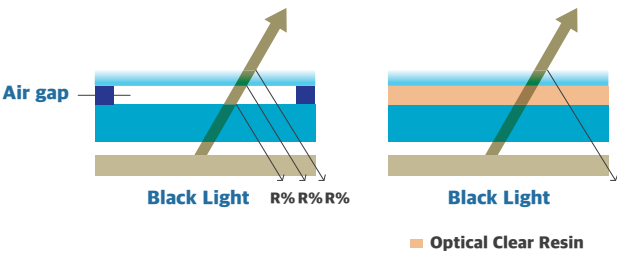
Optical Clear Resin

Applications

OCR(Optical clear resin) is an optical grade adhesive applied on laminated cover lens, touch panels and LCD modules. OCR can improve visibility and contrast ratio by reducing the reflection light between the interfaces in cover lens, touch panels or LCMs.

Features

- High transmittance
- Easy to rework
- Excellent adhesion on cover lens, touch panels and LCMs
- Non-yellowing, low dosage
- Fast cure, low dosage



Specifications

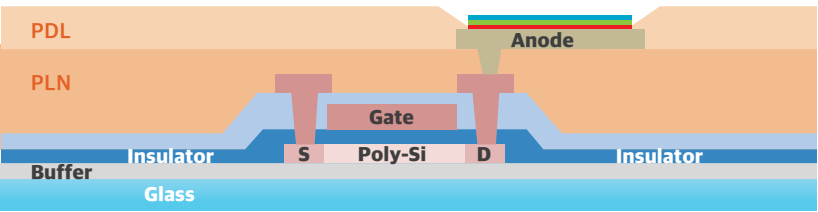
Product Name		OCRP198	Remarks
Field of Applications		DGS/LCM&GFF/ LCM&On-cell	
Features		·Low Modulus for Mura Free ·Easy to rework ·High Dielectric Constant	
Viscosity	cP	2,900	Brook Field Viscometer at 25.0±1.0°C, CPE 51
Non-Volatile Matter Content	%	100	
Exposure Energy	mJ/cm ²	2,000 ~ 5,000	Depend on UV lamp
Operating Environment (Yellow/ White Light)		Yellow	
Transmittance at 400nm	%	>95	THK 0.3 mm G/G
Yellow Index		0.55	THK 0.3 mm G/G
Haze	%	0.26	THK 0.3 mm G/G
Tensile Adhesion	kPa	210	THK 0.3 mm G/G *THK 0.15 mm G/G
Elongation	%	2,500	
Elastic Modulus	kPa	2.3	
Dielectric Constant		5.2	1MHz

Flexible EPD/OLED Materials

Photosensitive Dielectric/Passivation

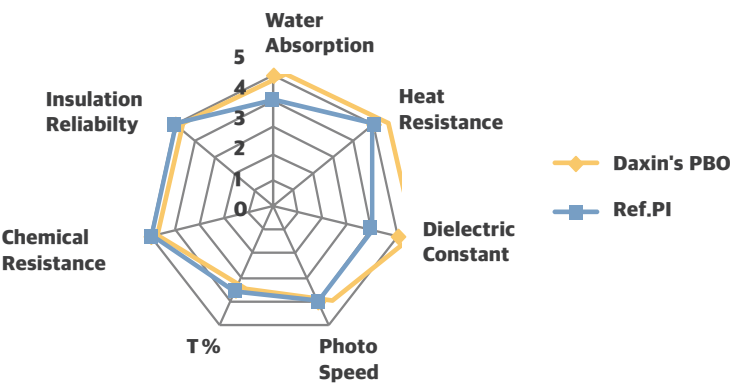
Applications

PBO dielectric layers can be used as the pixel defining layer (PDL) over the pixel electrode or the planarization layer (PLN) covering the TFTs in an organic light emitting diode display (OLED) and Electronic Paper Display (EPD).



Features

- Low water absorption
- Low dielectric constant
- Precision planarization capabilities
- Excellent mechanical and thermal properties
- High chemical resistance
- New : UV-resistance



Specifications

Product Name		PDLN-200 Series			Remarks
Pattern Availability		PLN	PDL	PS	
Features		THK 2.0um, Via 5~6um, Taper 50°~60°	THK 1.5um, Via 10~15um, Taper <30°	THK 1.0um, Dot 10~15um, Taper < 30°	
Water Absorption	%	(1) 0.11 (2) 0.39			TGA (RA85/85, 24Hr) (1) 30°C, 30 min (2) 120°C, 10 min, 10°C/min
Td (1%)	°C	293			
Weight Loss	%	0.57			After 250°C/1hr
Chemical Resistance	-	5B			TMAH, Stripper, Ag etchant, Oxalic acid
Dielectric Constant	-	3.43 3.21			@1kHz @1MHz
Recovery Ratio	%	55.4			Bump size: 10µm x 10µm THK: 1µm
Transmittance	%	94.5			THK 1.5µm at 550 nm

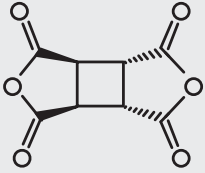


Key Raw Materials

Functional Monomer

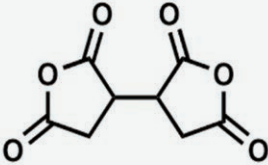
CBDA

Cyclobutane-1,2,3,4-tetracarboxylic dianhydride (CBDA) is an alicyclic dianhydride. Based on our unique photochemical reaction, we can synthesize the core structure of cyclobutane and the configuration of CBDA can be determined to be cis-trans-cis. CBDA is widely used as a raw material for polyimide resins or polyamic acid resins because of its high reactivity during polymerization. In the application of display materials, such as alignment films for liquid-crystal-display devices, CBDA provides excellent electrical properties such as high VHR (Voltage Holding Rate) and low RDC (residual DC Voltage Measurement). Furthermore, polymers made of CBDA offer good transparency and excellence flexibility, and therefore it is a good candidate for flexible substrate applications.

Properties		Structure
Formula	C ₈ H ₄ O ₆	 cis-trans-cis form
CAS Number	4415-87-6	
Molecular Weight	196.11	
Appearance	White Powder	
Melting Point	> 300°C	
Ion Content (Na, K, Cu, Fe)	< 500 ppb	
Solubility	Soluble in NMP, DMAc Slight soluble in Ac ₂ O	

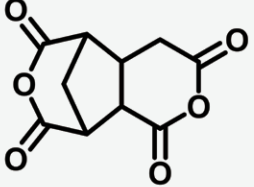
BDA

Meso-Butane-1,2,3,4-tetracarboxylic dianhydride (BDA) has good dielectric properties and flexibility which makes it widely used in polyimide resins or polyamic acid resins.

Properties		Structure
Formula	C ₈ H ₆ O ₆	
CAS Number	4534-73-0	
Molecular Weight	198.13	
Appearance	white powder	
Melting Point	>240°C	
Ion Content (Na, K, Cu, Fe)	<500ppb	
Solubility	Soluble in NMP ,DMAc	

TCA

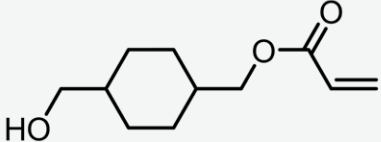
3-(Carboxymethyl)-1,2,4-cyclopentanetricarboxylic Acid 1,4:2,3-dianhydride (TCA) is an alicyclic dianhydride, which is widely used as a raw material for polyimide resins or polyamic acid resins in the application of alignment films for liquid-crystal-display devices due to good solubility and thermal stability. Based on our own developed synthetic process, TCA can be obtained in high purity with low ion content.

Properties		Structure
Formula	C ₁₀ H ₈ O ₆	
CAS Number	6053-46-9	
Molecular Weight	224.17	
Appearance	white powder	
Melting Point	>197°C	
Ion Content (Na, K, Cu, Fe)	<500ppb	
Solubility	Soluble in NMP ,DMAc	

Monoacrylate

CHDMMA

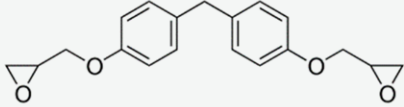
1,4-Cyclohexanedimethanol monoacrylate(CHDMMA) is manufactured with high purity by Daxin unique synthesis method and widely applied to coating, photoresist and adhesives.

Properties		Structure
Formula	C ₁₁ H ₁₈ O ₃	
CAS Number	23117-36-4	
Molecular Weight	198.26	
Appearance	Transparent liquid	
Viscosity(25°C)	90-105cPs	
Purity	>98%	

Low Chlorine Epoxy Monomer

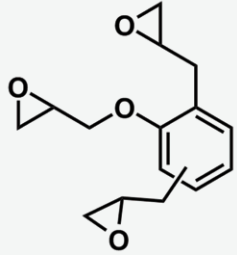
BPF Epoxy Monomer

Bisphenol F epoxy monomer is manufactured by Daxin halogen-free process to achieve extremely low halogen content and high purity. This unique epoxy monomer can be ideally applied to semiconductor encapsulation in terms of high reliability requirements.

Properties		Structure
Formula	$C_{19}H_{20}O_4$	
CAS Number	2095-03-6	
Molecular Weight	312	
Appearance	Colorless to pale yellow liquid	
Viscosity (25°C)	1.0 - 2.0 Pa · s	
EEW	156 - 168 g/eq.	
Total Halogen Content (Cl, Br)	1~100 ppm (Customized)	
Metal ion Content (Na, K, Ca, Fe)	<5 ppm	

TGP

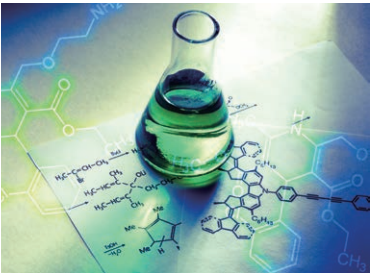
Triglycidylphenol epoxy monomer consists of high-ratio epoxy functional groups and demonstrates low viscosity, low halogen content and low water absorption to meet the requirements for high degree of cross-linking, low formulation viscosity and high reliability.

Properties		Structure
Formula	$C_{15}H_{18}O_4$	
CAS Number	13561-08-5	
Molecular Weight	262	
Appearance	pale yellow liquid	
Viscosity (25°C)	0.2 - 0.6 Pa · s	
EEW	88 - 99 g/eq.	
Total Halogen Content (Cl, Br)	1~100 ppm (Customized)	
Metal ion Content (Na, K, Ca, Fe)	<5 ppm	

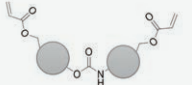
Specialty Polymer

Modified Acrylate

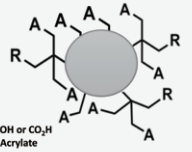
Daxin is committed to providing a wide range of modified acrylate oligomers and polymers with high performance, such as high reactivity, high adhesion and ability of development, to satisfy customer's requirements of high-end products. Daxin's modified acrylates have been used in the optical adhesives, photoresists for display, UV coatings, and other specialty applications.



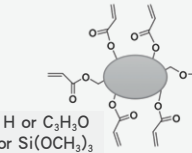
Polyurethane Acrylate

Product name	Structure	Functionality	Viscosity (cP @ 25°C)	D _k (@1MHz)	Characteristics	Applications
DAU001		2	54,000-68,000	5.2	Flexibility, High elongation, High Dk	UV adhesives

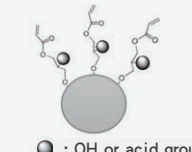
Multifunctional Acrylate

Product name	Structure	Functionality	Viscosity (cP @ 25°C)	Acid Value (mg KOH/g)	Characteristics	Applications
DAC001	 R = OH or CO₂H A = Acrylate	≥ 5	42.5 ± 4	14.5 ~ 18	Alkaline-soluble, High mechanical strength, High photo sensitivity	UV ink, UV-coating, Photoresist

Silane-containing Acrylate

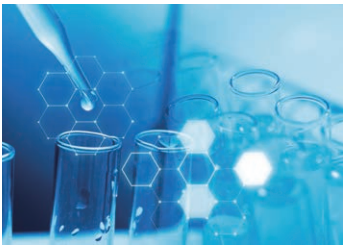
Product name	Structure	Functionality	Viscosity (cP @ 25°C)	Characteristics	Applications
DAS001	 R: H or C₂H₅O or Si(OCH₃)₃	140 ~ 180	7.2	High adhesion, High toughness	UV coating, photoresist, adhesives

Alkaline-soluble Acrylate

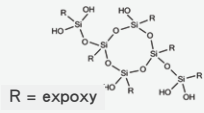
Product name	Structure	Functionality	Viscosity (cP @ 25°C)	Characteristics	Applications
DAE001	 ● : OH or acid groups	560-600	22 ± 4	High thermal stability, Alkaline-soluble	UV coating, photoresist

Modified Siloxane

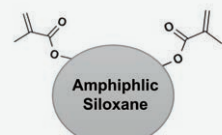
With its expertise in side-chain design and synthesis approaches, Daxin has developed several modified-siloxane products, including epoxy-modified siloxane and acrylate-modified siloxane, with thermal/UV curable abilities. In addition, special structures introduced in the side chain provides siloxane-based materials unique features, such as flexibility, low shrinkage, amphiphilicity...etc., that make them good candidates for special requirements. The potential applications for these modified siloxanes are sealant, hardener for coating, silicone hydrogel...etc.



Epoxy-modified Siloxane

Product name	Structure	Functionality	EEW (g/eg)	(cP @ 25°C)	Characteristics	Applications
DSE002	 R = epoxy	1	178	40 ± 10	High thermal stability, low shrinkage, hardness	Thermal curing hardcoat

Acrylate-modified Siloxane

Product name	Structure	Functionality	(cP @ 25°C)	Characteristics	Applications
DSA001	 Amphiphilic Siloxane	2	40,000	UV/thermal curable, amphiphilicity	Silicone hydrogel, coating,

High-Purity Polymer

With the ability of polymer synthesis, precision manufacturing and purification technologies, Daxin can provide the polymers used in photoresists. Our high purity polymers can meet the requirements of well-controlled Mw (molecular weight) /PDI(polymer dispersity index) /copolymer ratio and low metal content. Powder and solution form are both available.



Instrument Analysis

Development and Improvement of Analytical Techniques and Testing Equipment

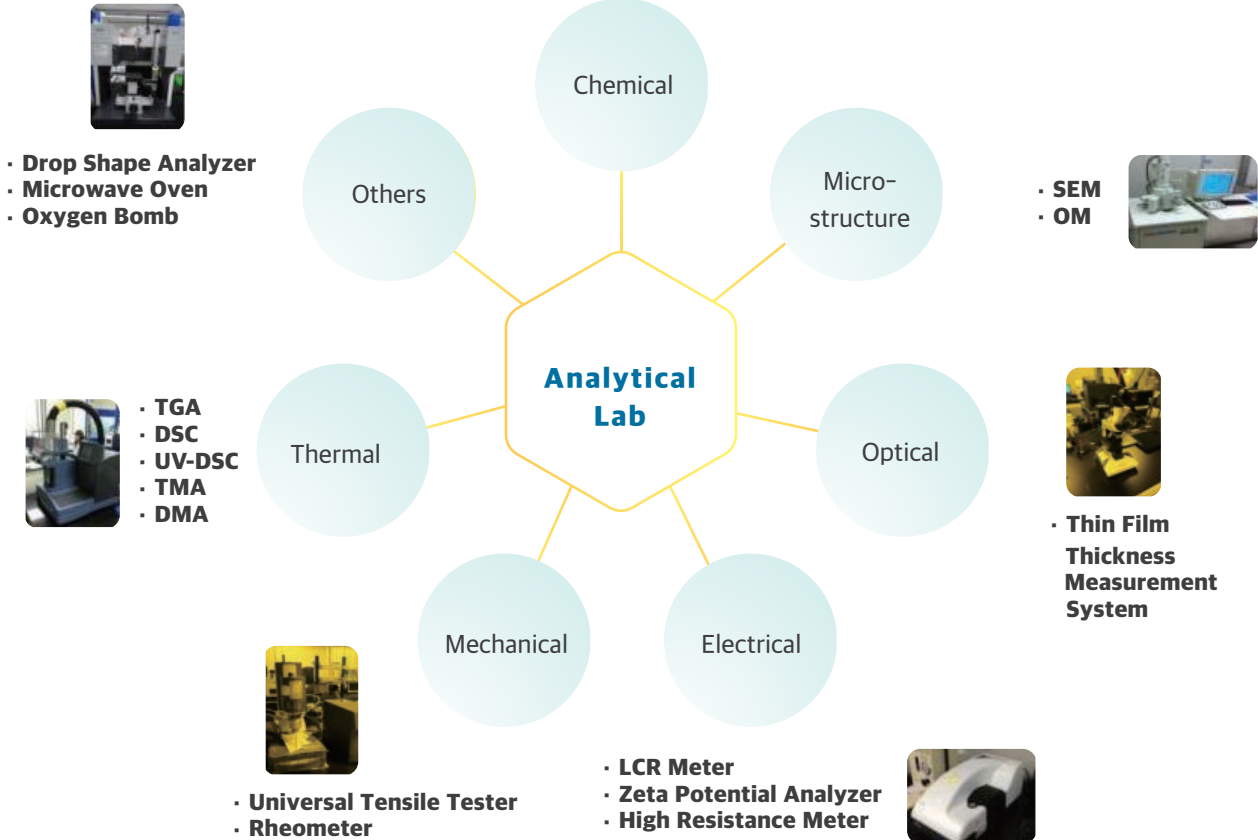
- Cold trap-GC/MS (Ex. Evolved Gas Analysis and Thermal Desorption Analysis)
- Development of testing method for the thermal expansion coefficient of transparent material film
- Development of technology on the rate of development of thin film material
- Modifications of variable temperature testing

Identification of Chemical Composition

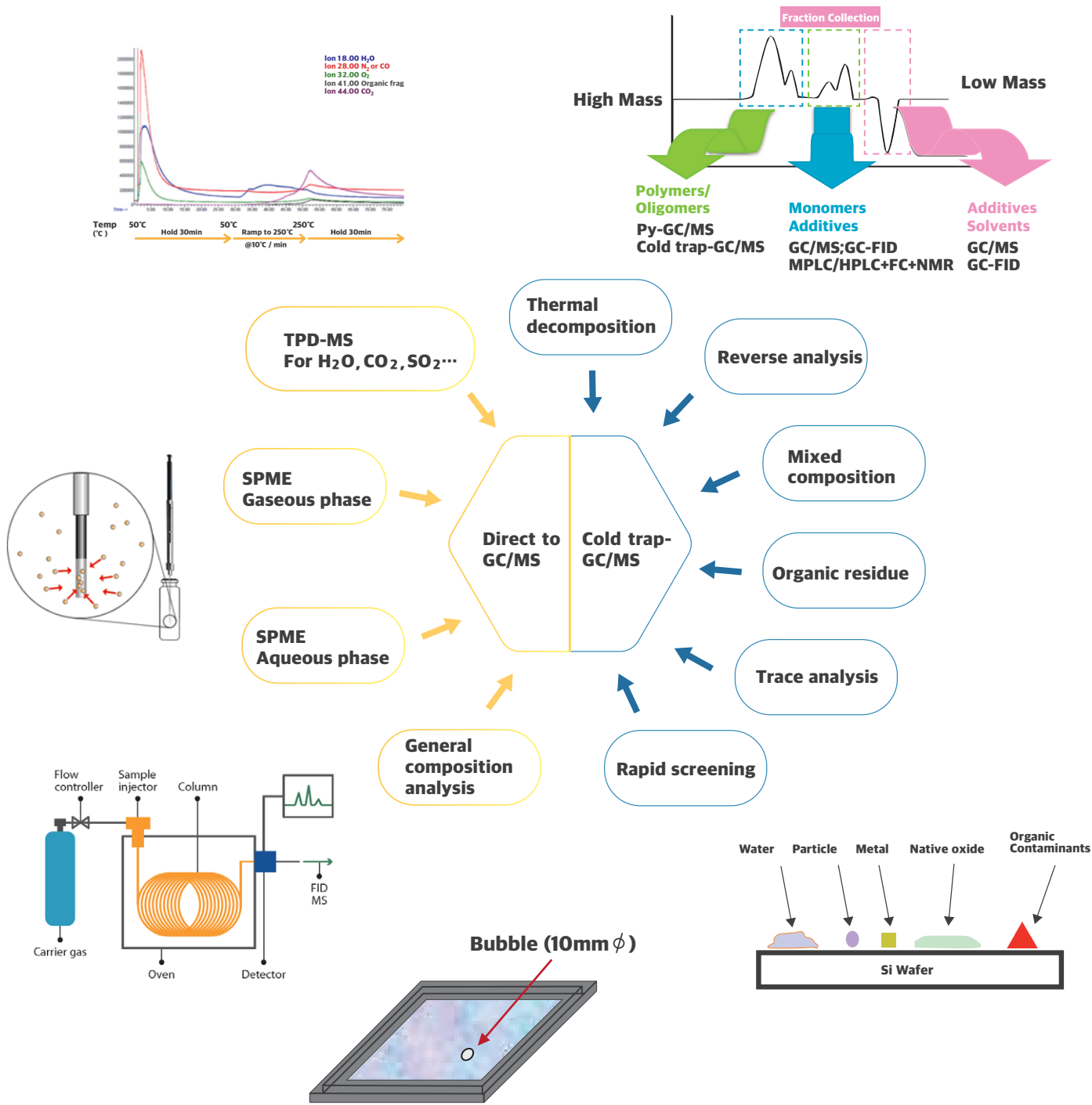
- Separation and purification of mixtures
- Composition identification
- Product failure mode analysis
- Identification of impurities and source tracking
- Product efficacy difference analysismaterial



- Chromatography: GC, HPLC, IC, GPC
- Mass Spectrometry: GC-MS, ICP-MS
- Spectrum: FTIR, UV-Visible



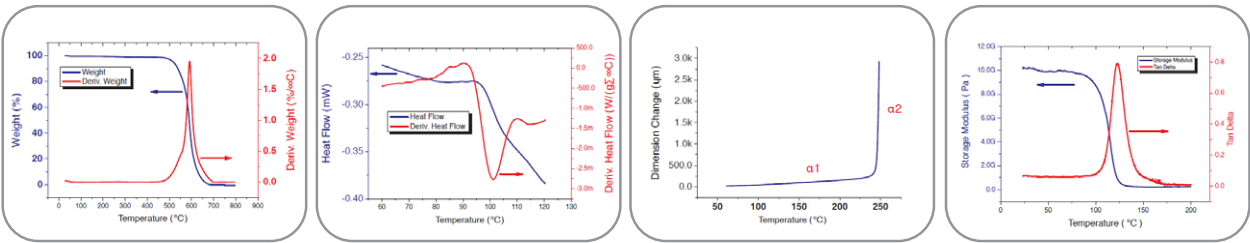
Organic Components/Outgas Analysis



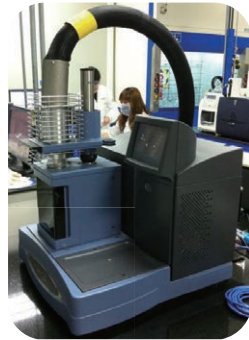
Thermal Analysis

Physical parameter varies with temperature, time, and environment

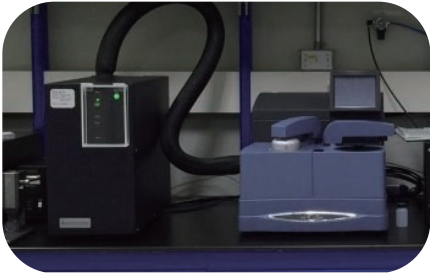
TGA	DSC	TMA	DMA
Weight change	An endothermic or exothermic change	Dimension change	The response to obtain phase angle and deformation data as applying a stress or strain the sample
- Decomposition temperature (T_d) - Composition information - Thermal stability	- Glass transition temperature - Melting temperature - Crystallization temperature - Endothermic or exothermic reaction	- Thermal expansion coefficient - Glass transition temperature - Melting temperature	Change with temperature while under dynamic stress



TA TGA
Model: Q500
Applications:
1. Weight loss analysis
2. Thermal stability analysis
3. General composition analysis



TA TMA
Mode: Q400 EM
Applications:
1. CTE
2. Strain & stress
3. Creep analysis



TA DSC
Model: Q200 & Q2000
Applications:
1. Phase transition temperature (T_m, T_g, T_c)
2. Heat of reaction
3. Specific heat capacity
4. Compatible with UV-light



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