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## TECHNICAL DATA

**Advance Materials Corporation LTD.**

**PSR-550B WH-70 / LS-55B W100**

**Liquid Photo-imageable Solder Resist Ink**

### 1.Features

- Dual-component/screen printing /alkaline developable
- Have long shelf life time
- Wide operating tolerance
- Excellent peeling resistance and solder heat resistance

### 2. Specifications

Mixing ratio	Main agent ( PSR-550B WH-70 ): 80wt% Hardener ( LS-55B W100 ): 20wt%
— Color	White
— Viscosity	160 ± 20 Pas ( 25°C ) (Cone plate type viscometer)
— Solid content	80 ± 3 wt%
— Specific gravity	1.4±0.1
— Holding time (mix)	24hrs(under yellow lamp, below 25°C)
— Pre-cure limit	80°C * 50min (regard as used condition)
— Exposing energy (thickness@1~1.5 mil)	400 ~ 600 mJ/cm <sup>2</sup>
Shelf life	9 months after production(store in dark and cool room below 20°C)



### 3. Operation parameter

Pre treatment	Chemical treatment or acid treatment			
Dilute	Under 2%			
Printing	Use 90~125mesh screen for printing			
Holding time (Before pre-cure)	10~20min			
Pre-cure	Oven type			
	First side	72~75°C/15~20min		
	Second side	72~78°C/20~25min		
	Both side cure on the same time	72~75°C/40~50min		
Holding time (before exposure)	10~20min			
Exposure	Use mental halogens lamp 7KW 400~600mj/cm <sup>2</sup> (arrival at ink surface)			
Holding time (before developing)	10~20min			
Developing	Developing agent	1.0~1.2% Na <sub>2</sub> CO <sub>3</sub>		
	Temperature	30~33°C		
	Pressure	2~3kg/cm <sup>2</sup>		
	Time	80~120sec		
Water wash	Liquid temperature	Normal atmospheric temperature		
	Pressure	2~2.5kg/cm <sup>2</sup>		
	Water washing	45 sec.		
Post curing	Oven type			
	None plug hole, chemical deposit Au board	150°C/60min		
	Plug hole	First step	80~90°C/30~60min	
		Second step	100~120°C/ 30min	
		Third step	150°C ~160°C/60~70min	

※The best operating process conditions by our technical personnel adjust in accordance whit actual situation.



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### **4. Attention in process and store:**

1. Operation in a clean room of ambient temperature at 20~25°C and humidity 50~60RH %, under yellow lamp.
2. Fully mix and stir main component and hardener, before operation please wait ink temperature to revive room temperature.
3. Appropriate coating thickness on copper circuits after cure is 20~25  $\mu$  m.
  - (1) Coating less than the said value may cause lower resistivity in solder heat, chemical and Ni/Au plating.
  - (2) Thicker coat may cause undercut and insufficient tackiness.
4. As curing condition and window are variable depending on the type of drying oven, the board curing may degrade the properties of coating film.
5. As exposure energy is variable depending on
  - (3) Material of substrates ( Di-Function or Tetra-Function )
  - (4) Coating thickness
  - (5) QFP prior testing on resolution (under)
  - (6) Surface gloss level.
6. Control well the quality of developing agent in its concentration, temperature, spray pressure and dwelling time. Insufficient control may cause deterioration in develop ability or undercut.
7. Store the ink in a cool place below 25°C
8. Use this ink places to avoid any hot source or flame.
9. If contact with eyes or skin, rinse with plenty of water. Do not wash any solvent.



## 5.Characteristics

### (1). Pre-cure windows

Procure time (min) / Temperature (°C)	25	30	40	50	60
80°C	○	○	○	△	×
75°C	○	○	○	○	△
70°C	○	○	○	○	○

### (2). Developing windows

Time / Precure conditions	12hr	24hr	36hr	48hr
75°C*40min	○	○	△	×

conditions : temperature  $22 \pm 2^{\circ}\text{C}$  humidity  $55 \pm 10\text{RH}\%$ . developing : 1 %  $\text{Na}_2\text{CO}$



**6. Test Results for IPC-SM-840C Class H**

Test items		Test methods	Properties	Test results
3.4.8	Appearance	Checking the appearance of surface by 1.75~10ble of eyepiece	No crack, peeling, or rough	Good
3.5.2.1	Adhension	For IPC-TM-650, method of TM2.4.28.1	Cupper $\leq 0\%$ Au or Ni $\leq 5\%$ Substrate $\leq 0\%$ Soft metal $\leq 10\%$	Good Good Good Good
3.5.1	Pencil Hardness	For IPC-TM-650, method of TM2.4.27.2. Keep 45 degree of pencil, moving 1/4inch.	$\geq F$	$\geq 6H$
3.5.3	Resistance to Abrasion	Drilling, cuts, or hit	No crack, peeling, or rough	Good
3.4.5	Hardening	3.6.1.1 Resistance against solvent 3.7.2 Soldering 3.7.3 Soldering heat resistance	Reference of 3.6.1.1 、 3.7.1 and 3.7.2 need.	Good
3.6.1	Resistance to Solvents	<ul style="list-style-type: none"> <li>• IPA : room 2MIN.</li> <li>• 75%IPA+25% water : 46<math>\pm</math>2<math>^{\circ}</math>C 15MIN.</li> <li>• D-lemon ink : room 2MIN.</li> <li>• 10% alkaline : 57<math>\pm</math>2<math>^{\circ}</math>C 2MIN. <math>\leq 40\%</math> Hydramine <math>\leq 20\%</math> BCS <math>\leq 20\%</math> Hexanediol (PH<math>\leq 13</math>)</li> <li>• Ethyl alcohol ammonia : 57<math>\pm</math>2<math>^{\circ}</math>C 2MIN.</li> <li>• Ionic-exchange water : 60<math>\pm</math>2<math>^{\circ}</math>C 2MIN.</li> </ul>	No crack, peeling, or rough, dilatant, discolor etc.	Good Good Good Good Good Good
3.6.3	Flammability	For UL-94 V standard	On spec.	94 V-0
3.7.1	Solder Heat Resistance	By J-STD-003 method, after fluxing, stay 5MIN.. Floating soldering for 10 $\pm$ 1sec. on 260 $\pm$ 5 $^{\circ}$ C	No reduce soldering on substrate	Good



Test items		Test methods	Properties	Test results
3.7.2	Soldering heat Resistance	(By J-STD-004 method, M-type flux; J-STD-006 method, Sn63 flux.) after fluxing, stay 5MIN.. Floating soldering for 10±1sec. on 260±5°C	No soldering on ink	Good
3.6.2	Stable after high humidity	For IPC-TM-650, method of TM2.6.1.1 97±2°C 90~98%RH 28days	No reversed change	Good
3.8.1	Medium strength	For IPC-TM-650, method of TM2.5.6.1	Least 500VDC on 0.025mm (0.001inch) of thickness	Good 1.95KV/mil
3.8.2	Insulation Resistance	For IPC-TM-650, method of TM2.6.3.1 The minimum resistance number of before and after soldering	IPC-B-25Patterm B, Min. 5X10 <sup>8</sup> Ω at 500VDC	Before: 2.3 X10 <sup>13</sup> Ω After: 2.5 X10 <sup>12</sup> Ω
3.9.1	Insulation Resistance after high humidity	For IPC-TM-650, method of TM2.6.3.1 Condition of 25~65°C, 85%RH, put 50VDC, either for 160hrs to put 100VDC voltage	IPC-B-25Patterm B, Min. 5X10 <sup>8</sup> Ω at 500VDC	Initial: 1.8 X10 <sup>13</sup> Ω final: 1.6 X10 <sup>12</sup> Ω
3.9.2	Elect-etching	For IPC-TM-650, method of TM2.6.14 Condition of 85±2°C, 90%RH, put 10VDC, either for 168hrs to put 10VDC voltage	No migration, resistance >2MΩ	Good
3.9.3	Thermal shock	For IPC-TM-650, method of TM2.6.7.1 -65°C *15min. to 125°C *15min., 100 cycles	No crake, peeling,	Good