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Photo Imageable Flexible Solder Mask

PSR-9000 A02/ CA-90 A02

Dec. 1999

1. FEATURES

PSR-9000 A02 / CA-90 A02 is a dual-component, alkaline developable liquid photo imageable solder mask for screen printing use for flexible PCB, having excellent gold plating resistance.

2. SPECIFCATION

Product name	Main agent : PSR-9000 A02 Hardener : CA-90 A02
Color *	Green
Mixing ratio	Main agent : 70 Hardener : 30 (by weight)
Viscosity *	170dPa·s (E model viscometer 5min^{-1}/25℃)
Solid content *	65～70 wt%
Specific gravity *	1.1
Tack dry window*	80℃ / 60 min.(Maximum)
Exposure energy *	400 ～ 600 mJ/ c ㎡ (under Mylar film)
Pot life *	24 hours (Stored at dark place, 25℃ or below)
Shelf life	6 months after production (Stored at dark place , 20℃ or below)

* After mixing with hardener.

3. PROCESS

Process	Condition		Tolerance window
Test panels	Polyimide		
Surface preparation	Acid treatment → Scrubbing		
Printing	#100 mesh poly ester screen		
Hold time	10 min.		
Tack dry	80℃ / 20 min. (Hot air convection oven)		[15～30 min]
Exposure	500 mJ / cm^2 (under Mylar film) 350 mJ / cm^2 (on the ink surface) Metal haide lamp 7kw, ORC HMW-680		[400～600 mJ / cm^2] [280～420 mJ / cm^2]
Hold time	10 min		[10～20min]
Development	Developer Temperature Spray pressure Dwelling time	1wt% Na_2CO_3 30℃ 0.2 MPa 60 sec.	 [0.2～0.25 MPa] [60～90 sec.]
Water rinse	Temperature Spray pressure Dwelling time	25℃ 0.1 Mpa 45 sec.	[30℃ or below] [0.1～0.15 Mpa] [45～60 sec.]
Post cure	150℃ / 60min. (Hot air convection oven)		

4. ATTENTION

- As to operation environment, it is desirable to deal with ink in the clean room and 25℃ is recommendable temperature condition for printing.
- The adequate coating thickness is 15～20μm on copper after curing. Thin coating than normal may reduce its solder heat resistance and acid resistance.
- Optimum curing condition should be set based on confirmation test because the are influenced according to the type of drying oven, the quantity of the boards to be dried. Poor curing or oven curing may cause the degration of properties.
- As to cleaning the screen, ether or ester solvent is used for cleaning.
- It is desirable to use ink without dilution. Even if you feel difficulty of printing by high viscosity. Please dilute ink as little as possible (MAX 2wt%) because over dilution may degrade properties.
- After mixture with hardener, stir thoroughly.

5. CHARACTERISTICS

① Tack dry window

Drying Time (80℃ / min.)	40	50	60	70	80
Developability	○	○	○	○△	△

② Photosensitivity

Item	Coating thickness	Exposing energy	Photo sensitivity	
			Glass Epoxy	Polyimide
Sensitivity Kodak No.2	20±2μm	400 mJ/cm^2 (280 mJ/cm^2)	4 step	4 step
		500 mJ/cm^2 (350 mJ/cm^2)	5 step	5 step
		600 mJ/cm^2 (420 mJ/cm^2)	6 step	6 step

Item	Coating thickness	Exposing energy	Photo sensitivity	
			Thickness①	Thickness②
Resolution Between QFP pads	①20±2μm	400 mJ/cm^2 (280 mJ/cm^2)	60μm	80μm
	②40±5μm	500 mJ/cm^2 (350 mJ/cm^2)	50μm	70μm

* The exposure energy was measured under mylar film.
  Figures in ( ) were measured on ink surface.
* Resolution shows the remaining line width between QFP.

③ Properties

Item	Test Conditions	Result
Adhesion	JIS D0202 Cross hatch peeling	100 / 100
Pencil hardness	JIS K5400 No scratch on copper	5H
Bendability	R=3.0mmφ (On imide)	20 cycles
	MIT test method : JIS P8115 R=0.38mm, Load=0.5kgf Bending=135° R=1.0mm, Load=0.5kgf Bending=135°	 15 cycles 500 cycles
Solder heat resistance	Rosin flux 250℃/10sec, 1cycles	Pass
Solvent resistance	PGM-Ac, Acetone, MEK 20℃ / 20min. immersion and tape peeling	Pass
Acid resistance	10vol%-H_2SO_4, 20℃ / 20min. immersion and tape peeling	Pass
Alkaline resistance	10wt% NaOH, 20℃ / 20min immersion and tape peeling	Pass
Insulation resistance	IPC comb type (B pattern) 25℃ / 65%RH / 500V / 1min. Humidity : 25～65℃ (cycle) 90%RH DC100V 7days	Initial $5.0\times10^{13}\Omega$ Conditioned $2.0\times10^{11}\Omega$
Dielectric constant	JIS 6184 1MHz Measured at room temp	3.1
Dissipation factor	JIS 6184 1MHz Measured at room temp	0.03
Electroless gold plating	Ni-3μm, Au-0.03μm	Pass

*All test data mentioned above in this technical data sheet are based on our laboratory test result and only for reference, not to guarantee the same in your process.