DATA SHEET

2007.01

Z TAIWAN TAIYO INK CO.,LTD

No.7, Ta Tung 2nd Rd., Kuan-Yin Industry Park Taoyuan, Taiwan, R.O.C.

TEL:886-3-483-3231

FAX:886-3-483-3599

PSR-4000 PF9L / CA-40 PF9

(PSR-4000GW / CA-40GW)

1. FEATURES :

PSR-4000 PF9L / CA-40 PF9 is a liquid photo imageable hole plugging ink (alkaline development type), used for screen printing. Which has the characteristic such as

- not appear the crack
- hollow are less
- fine blistering resistance
- tack dry window are wider
- fine solvent resistance

2. SPECIFICATION :

Main agent	PSR-4000 PF9L
Hardener	CA-40 PF9
Color*	Green
Mixing ratio	Main agent : 70 / Hardener : 30 (By weight)
Viscosity*	150 dPa・s (Cone / Plate Viscometer, $5min^{-1}$ / 25℃)
Tack free window*	80℃ / 70 min (Maximum)
Exposure energy*	300 ~ 500 mJ/cm^2 (on the solder mask)
Pot life*	24 hours (stored in dark place at less than 25℃)
Shelf life**	6 months (stored in dark place at less than 25℃)

* : After mixing

** : After manufacturing

DATA SHEET	PSR-4000 PF9L /CA-40 PF9

3. PROCESS CONDITION

PROCESS		RANGE
PWB	FR – 4 , 1.6 mm	
Pre-treatment	Acid treatment → brushing	
Printing	100 mesh-count	90 ~ 125 mesh
Hold time	10 min	10 ~ 20 min
Tack free	➢ Both sides simultaneous exposure 1 st printing : 80℃ / 15 min 2nd printing : 80℃ / 25 min (Hot air convention oven) ➢ Single side exposure 80℃ / 30 min (Hot air convection oven)	 80℃ / 10~20 min 80℃ / 20~30 min 80℃ / 20~40 min
Exposure	400 mJ/cm^2 (on the solder mask)	300 ~ 500 mJ/cm^2
Hold time	10 min	10 ~ 20 min
Development	Aqueous alkaline solution : 1 wt% Na_2CO_3 Temperature of developer : 30℃ Spray pressure : 0.196 MPa Developing time : 60 sec	 0.196 ~ 2.45 MPa 60 ~ 90 sec
Water rinse	Temperature：25℃ Spray pressure：0.098 MPa Dwelling time：45sec	30℃ or below 0.098~0.147Mpa 45~60 sec
Post cure	80℃ / 30 min→110℃ / 30min, 150℃ 60min (Hot air convection oven)	

4. ATTENTION ON EACH PROCESS :

- As to the operation environment. It is desirable to deal with the ink under the yellow lamps in the clean room. Please avoid using it under white fluorescent lamps or sunlight (directly or indirectly).
- The adequate thickness is 10 ~ 20 um (on the copper after curing).
  Thin coating possibly reduces its solder heat resistance. On the other hand, thick coating possibly causes the under-cut or low tackiness.
- Please set the pre-cure conditions and tack free window after the confirmation test because they are influenced according to the type of the drying machine and the quantity of the board to be dried.

- Please set the exposing energy after the confirmation test of under-cut, surface gloss, back side exposure and so on because it is influenced according to the material of the board, the thickness of ink, etc.
- Regarding the developing process, please control the developer density, the temperature, the spray pressure and the developer time, etc.
  The inadequacy of control causes the degradation of the developability and the increase of under-cut.
- Please set the post cure conditions considering the curing time of the marking ink.
  Insufficient curing or over curing may cause the degradation of properties.

5. CHARACTERISTIC

(1) TACK FREE TOLERANCE WINDOW :

Drying time (80℃ / min)	50	60	70	80
Developability	○	○	○	×

(2) PHOTO SENSITIVITY :

Item	Thickness	Energy	Developing time	Sensitivity
Sensitivity Kodak No.2 (Step density tablet)	22 ± 2 μm	200 mJ/cm^2	60 sec.	5 step
		300 mJ/cm^2		6 step
		400 mJ/cm^2		7 step
Resolution (Between QFP)	40 ± 2 μm	200 mJ/cm^2	60 sec.	50 μm
		300 mJ/cm^2		50 μm
		400 mJ/cm^2		50 μm

The exposure energy is measured on the solder mask by using ORC HMW-680,7Kw,metal halide lamp.

(3) PROPERTIES :

Item	Test method	Test result
Adhesion	GIF-007AA Standard Cross-cut tape stripping test	100 / 100
Pencil hardness	GIF-009AA Standard On copper foil, no Cu exposure	6H (min)
Solder heat resistance	Solder float test : Rosin flux, 260℃ / 30 sec (10sec 3 times)	Passed
Solvent resistance	PMA dipping, room temp./ 30 min Scotch tape stripping	Passed
Acid resistance	10 vol % H_2SO_4, room temp./ 30 min Scotch tape stripping	Passed
Alkaline resistance	10 wt% NaOH, room temp./ 30 min Scotch tape stripping	Passed
Insulation resistance	IPC comb type B pattern 25℃, 65% RH, 500V / 1 min Moisture conditioned:DC100V 25~65℃ (cycle), 90% RH, 7 days	Initial : $4.2 \times 10^{13}\Omega$ After : $5.6 \times 10^{11}\Omega$

Note : The above-mentioned test data is just for reference, not to guarantee the result.

6. Attention

A. Operate in area supported by local exhaust or general room ventilation to avoid build-up of high concentration of solvent vapors.

B. Use gloves and apron during operation. Wash with soap and water if ink is attached to the skin.

C. Wash hands and face with soap and water. Rinse out the mouth before eating or smoking.