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Dual-component, alkaline developable

Liquid photo imageable solder mask

PSR-2000 CE826 / CA-25 CE80

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Data Sheet No.:DAS-035025/037024-00

1. FEATURE:

PSR-2000 CE826 / CA-25 CE80 is a Photo imageable liquid alkaline –developable type solder mask ink , designed for screen printing with excellent popcorn and thermal resistance .

2. SPECTIFICATIONS:

Product name:	Main agent: PSR-2000 CE826
	Hardener: CA-25 CE80
Color:	Main agent: Green
	Hardener: Milk white
Mixing ratio:	Main agent: Hardener = 80：20 (by wt.)
Viscosity after mixing	120±20 dPa.s (Cone-plate viscometer $5min^{-1}$ /25℃)
Solid content:	76.0wt%
Specific Gravity:	1.4 (after mixing)
Tack dry window:	75 ℃×60min(Max)
Exposure:	400-600 mJ/cm² (Under Mylar film) 280-420 mJ/cm² (On solder mask)
Post cure:	150℃×60min
Pot life:	24 Hrs. (stored at dark & lustration place and closed, 25℃ or below)
Shelf life:	180 days after production (stored at dark place, 20℃ or below)

3. PROCESS CONDITIONS:

Process	Condition	Tolerance window
Test panels:	FR-4 (thickness 1.6mm)	-
Pretreatment:	Acid rinse → Buff scrubbing → Water rinse → Dry	-
Print:	100mesh	[90-125mesh]
Hold time	10 min	[10-20 min]
Pre-cure:	A: double side printing using pin and double side exposure or single side exposure	[75℃ 60min] (Max)
	75℃ 20-40min (Hot air convection oven)	
	B: two times printing and pre-cure for double side exposure	
	1st: 75℃ 15-25 min (Hot air convection oven)	
	2nd: 75℃ 20-35 min (Hot air convection oven)	
Exposure:	500 mJ/cm^2 (Under Mylar film)	[400-600 mJ/cm^2]
	350 mJ/cm^2 (On solder mask)	[280-420 mJ/cm^2]
	Halogen lamp 7kW (ORC HMW-680GW)	
Hold time:	10 min	[10-20 min]
Development:	Solution: 1wt% Na_2CO_3	
	Temp. 30℃	
	Spray pressure 0.196Mpa	[0.196-0.245Mpa]
	Time: 60s	[60-100s]
Water rinse:	Temp. 25℃	[20-30℃]
	Spray pressure 0.1Mpa	[0.1-0.15Mpa]
	Time: 45s	[45-60s]
Post cure:	150℃ 60 min (Hot air convection oven)	[150℃ 30-90 min]

Note: In order to avoid popcorn and blister after post-cure and HASL, the following process is recommendable:80℃×60min→150℃×60min→cooling(for a while) →150℃×30min

4. ATTENTION ON PROCESS:

a) As to operation environment, it is necessary to control temperature, humidity and dust. Please use the yellow lamp or ultraviolet ray filter .Do not use the white lamp or sunlight.
b) Incompetent mixing will cause quality problem, such as gloss unevenness and post cure problem.
c) The optimum coating thickness is 20 to 30 μm (after curing); Thinner coating tends to lower the thermal and gold plating resistance. Thicker coating tends to longer cure time and impress when exposure.
d) As every plant's drying equipments, process condition and quality target is different, so the temperature and drying time may also have difference. Please do verification test to define the operating conditions.
e) As every plant's exposure equipments, process condition and quality target is different, so the exposure energy and development time may also have difference. Please do verification test to define the operating conditions.
f) Please adjust the development solution, temperature, spray pressure and time follow this data to decrease the undercut and get the excellent result.
g) Insufficient cure of the ink can lower the thermal resistance, and excess cure can lower gold plating resistance. Furthermore, Curing condition of the solder mask ink should be defined together with the curing condition of the marking ink.

CA: Diethylene glycol monomethyl ether acetate (B.P 217 deg. C)

5．INK PROPERTIES:

5.1 TACK DRY WINDOWS:

Drying time (75℃)	40min	50min	60min	70min
Developability	OK	OK	OK	NG

5.2 PHOTO SENSITIVITY:

Item	Thickness um	Energy mJ/cm^2		Result
		Under Mylar	On S/M	
Sensitivity Kodak No.2	22±2	400	280	8step
		500	350	9step
		600	420	9step
Resolution Between QFP pads	40±2	400	280	80 um
		500	350	70 um
		600	420	60 um

(1 min development)

6. PROPERTIES:

Item	Teat Method	Result
Adhesion	Taiyo internal method Cross hatch peeling	100 / 100
Pencil hardness	Taiyo internal method No scratch on copper	6 H
Thermal resistance	Rosin flux 260℃/30sec， 1cycles	Passed
Acid resistance	10vol% H_2SO_4 20℃/20min. (Dip) Tape peeling test	Passed
Alkaline resistance	10wt% NaOH 20℃/20min. (Dip) Tape peeling test	Passed
Solvent resistance	PGM-Ac 20℃/20min. (Dip) Tape peeling test	Passed
Insulation resistance	IPC comb type (B pattern) Humidification: 25-65℃/90%RH/ DC100V Measurement: DC500V 1min.	Initial 1.1×10^{13}ohrm Conditioned Under evaluation
Dielectric constant	Taiyo internal method Values at 1MHz Humidification:25-65℃ / 90%RH	Initial 4.24 Conditioned Under evaluation
Dissipation factor	Taiyo internal method Values at 1MHz Humidification:25-65℃ / 90%RH	Initial 0.027 Conditioned Under evaluation

Note:

a) The above-mentioned data is based on TAIYO INK (SUZHOU) Company's laboratory test. As every plant's equipments, environment and parameters have difference, the data is only for your reference.

b) Please work in accordance with MSDS.