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Dual-component, alkaline developable
Liquid photo imageable solder mask

PSR-2000 CE887 HFA/ CA-25 CD16

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1. FEATURES:

PSR-2000 CE887 HFA / CA-25 CD16 is a liquid photo imageable solder resist ink (alkaline development type) used for screen printing.

- a) Excellent heat resistance.

2. SPECIFICATINS:

Product name	Main agent : PSR-2000 CE887 HFA
	Hardener : CA-25 CD16
U L S u f f i x	Main agent : PSR-2000BD
	Hardener : CA-25BN
C o l o r	Main agent : Green
	Hardener : White
Mixing ratio	Main agent : Hardener = 80 : 20 (by weight.)
V i s c o s i t y	150±20dPa.s (Cone-plate viscometer 5min ⁻¹ /25℃, After mixing)
Solid content	79.0±3wt% (After mixing)
Specific gravity	1.4±0.1 (After mixing)
Tack dry window	80℃×40min(Max)
Exposure energy	300-500 mJ/cm ² (Under Mylar film)
	210-350mJ/cm ² (On solder mask)
P o s t c u r e	150℃×60min
P o t l i f e	24 Hrs. (stored at dark & lustration place, 25℃ or below)

3. PROCESS CONDITIONS:

Process	Conditions	Tolerance
Test panels:	FR-4 (thickness 1.6mm)	-
Pretreatment:	Acid rinse → Buff scrubbing → Water rinse → Dry	-
Dilution volume:	100mesh	[9 0 - 1 2 5 m e s h]
Hold time:	10 min	[1 0 - 2 0 m i n]
Pre-cure:	Single side Coating 1 st :80°C 30-40 min (Hot air convection oven) Double side Coating 1 st :80°C 15-20min (Hot air convection oven) 2 nd :80°C 15-20 min (Hot air convection oven)	[80°C 40 min] (Max)
Exposure:	400mJ/cm ² (Under Mylar film) 280mJ/cm ² (On solder mask) Halogen lamp 7kW (ORC HMW-680GW)	[300-500mJ/cm ²] [210-350 mJ/cm ²]
Hold time:	10 min	[1 0 - 2 0 m i n]
Development:	Solution: 1wt% Na ₂ CO ₃ Temp.: 30°C Spray pressure: 0.196Mpa Time: 60 sec	- - [0.196-0.245Mpa] [6 0 - 9 0 s e c]
Water rinse:	Temp.: 25°C Spray pressure: 0.1Mpa Time: 45 sec	[2 0 - 3 0 ° C] [0 . 1 - 0 . 1 5 M p a] [4 5 - 6 0 s e c]
Post cure:	150°C 60 min (Hot air convection oven)	[150°C 30-90 min]

*In case of applying marking ink, solder mask should be cured at 150deg.C for 30 minutes, then marking ink should be cured at 140deg.C/20min for each side of PCB.

4. ATTENTION ON PROCESS:

- a) As to the operation environment, it is desirable to deal with the ink under the yellow lamps in the clean room which the temperature and the relative humidity is controlled at 20-25°C, 50-60% respectively. Please avoid using it under white fluorescent lamps or sunlight (directly or indirectly) because of the photopolymerization of the ink.
- b) Please mix with specified amount of hardener when the ink cools down to the room temperature. If it is found that the separation of the ingredient, please stir up sufficiently.
- c) If the main agent and the hardener could not be mixed sufficiently, will lead to inferior quality such as uneven gloss or poor solidification
- d) 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.
- e) If you feel difficulty in printing due to high viscosity, please use dilution such as Diethylene Glycol Monoethyle Ether Acetate (Carbitol Acetate) and Reducer-J. The maximum of the dilution is controlled to 2wt% (20 cc dilution could be added at most per kilogram), otherwise would lead to the flowing of ink or the poor heat and gold-plated resistance.
- f) Please test the production range according to the drying equipment, temperature and time of curing, production condition, kinds of dilution and requirements for quality.
- g) Please test the production range according to the exposing equipment, exposing energy, development time, production condition and requirements for quality.
- h) Please adjust the density and the temperature of developer, control the spray pressure and development time to avoid degradation of the developability according to the sheet.
- i) Please set the post cure conditions considering the curing time and temperature of the ink. Insufficient curing or over curing may cause the degradation of properties. Besides that it is considered the marking ink curing may have bad influence on the solder resist.
- j) Please confirm curing temperature and time first and then use. Because it may lead to oxidation of cuprum and discolor the ink while curing.
- k) Please keep the essential properties, operational performance well and then use. If samples are altered, you should also pay more attention.

5. INK PROPERTIES:

5.1 TACK DRY WINDOWS:

Drying time (80°C)	30 min	40 min	50 min	60 min
Developability	OK	OK	NG	NG

5.2 PHOTO SENSITIVITY

Item	Thickness	Energy		Result
	um	mJ/cm ² (under Mylar)	mJ/cm ² (on S/M)	
Sensitivity Kodak No.2	22±2	300	210	8
		400	280	9
		500	350	10
Resolution Between QFP pads	40±2	300	210	60µm
		400	280	50µm
		500	350	50µm

(1 min development)

6. PROPERTIES:

Item	Test Method	Result
Adhesion	Taiyo internal method Cross hatch peeling	100 / 100
Pencil hardness	Taiyo internal method No scratch on copper	6H
Solder heat resistance	Rosin flux 260°C/30sec, 1cycles	Pass
Acid resistance	10vol% H ₂ SO ₄ 20°C/20min. (Dip) Tape peeling test	Pass
Alkaline resistance	10wt% NaOH 20°C/20min. (Dip) Tape peeling test	Pass
Solvent resistance	PGM-Ac 20°C/30min. (Dip) Tape peeling test	Pass
Insulation resistance	IPC comb type (B pattern) Humidification:25-65°C/90%RH/ DC100V/ cycling for 7 days Measurement:DC500V 1min.	Initial 1.3×10 ¹³ Ω Conditioned 2.5×10 ¹¹ Ω
Dielectric constant	Taiyo internal method Values at 1MHz Humidification:25-65°C/90%RH 7Days	Initial 4.3 Conditioned 5.0
Dissipation factor	Taiyo internal method Values at 1MHz Humidification:25-65°C/90%RH/ cycling for 7 days	Initial 0.028 Conditioned 0.044
Total Halogen amount	Solid components calculated value Based on the values submitted from the manufacturer of raw material Cl Br Cl+Br	500ppm 0 500ppm

Note: The above-mentioned data is based on lab test @TAIYO INK (SUZHOU), which is only for your reference, because every facility may provide different result.

7. Attention:

- Please operate in accordance with SDS.
- Operate in area supported by local exhaust or general room ventilation to avoid build-up of high concentration of solvent vapors.
- Use gloves and apron during operation. Wash with soap and water if ink is attached to the skin.
- Wash hands and face with soap and water. Rinse out the mouth before eating or smoking.