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# **Two-pack Paint Imageable Solder Resist Ink**

## **PSR-2000 CD19G / CA-25 CD19**

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Data Sheet No.: DAS-PCTR18097/CCTR18083-01

## 1. Feature

PSR-2000 CD19G / CA-25 CD19 is suitable for alkaline imageable photosensitive solder resist ink of screen printing. Excellent heat resistance.

## 2. Specification

Product Name	Base Material: PSR-2000 CD19G
	Hardener: CA-25 CD19
UL Name	Base Material: -
	Hardener: -
Color	Base Material: Green
	Hardener: Colorless
Mixing Ratio	Base Material: Hardener = 85:15 (weight ratio)
Viscosity	150±20dPa.s (Cone-plate viscometer 5min <sup>-1</sup> /25 °C)
Non-Volatile Element	81±3wt%
Specific Gravity	1.5±0.1 (after mixing)
Dry Conditions	75°C×60min (Max.)
Exposure Conditions	400-600 mJ/cm <sup>2</sup> (Mylar)
	280-420 mJ/cm <sup>2</sup> (Ink Surface)
Hardening Conditions	150°C×60min
Retention Period After Mixing	24 Hours (Store in clean room and seal below 25°C)

## 3. Production Process

Process	Test Conditions	Range
Test Substrate:	FR-4 (thickness: 1.6mmt)	-
Pre-treatment	Pickling→ Non-woven grinding→ Wash→ Dry	-
Printing:	100 mesh	90-125 mesh
Resting Time:	10 Min	10-20 Min
Dry:	A: Double-sided exposure or single-sided exposure for double-sided printing of nail bed 75°C 30-60 Min (Hot air circulating dryer) B: Two printing drying for double-sided exposure 1 <sup>st</sup> Side:75°C20-30 Min (Hot air circulating dryer) 2 <sup>nd</sup> Side:75°C20-30 Min (Hot air circulating dryer)	75 °C 60 Min ( Max. )
Exposure:	500mJ/cm <sup>2</sup> (Mylar Under) 350mJ/cm <sup>2</sup> (Ink on the surface) The exposure lamp is a halogen lamp 7kW (ORC HMW-680GW).	[400-600 mJ/cm <sup>2</sup> ] [280-420mJ/cm <sup>2</sup> ]
Standing Time:	10 Min	[10 - 20 Min]
Imaging Conditions:	Imaging: 1wt% Na <sub>2</sub> CO <sub>3</sub> Temperature: 30°C Water-spraying pressure: 0.196Mpa Time: 60s	- - [0.196-0.245Mpa] [60 - 90s]
Washing:	Temperature: 25°C Water-spraying pressure: 0.1Mpa Time: 45s	[20 - 30 °C] [0.1 - 0.15Mpa] [ 45 – 60s ]
Harden:	150°C 60 Min (Hot air circulating dryer)	[150°C 30-90 Min]

#### 4. Notes:

- 1) Working environment: 20-25°C, 50-60%RH, dust-free plant.  
In addition, if used directly or indirectly under white light or sunlight, it will cause photopolymerization. So please work under yellow light.
- 2) Ink must be opened and used after its temperature similar with room temperature. Before using it, you should mix it with the specified amount of hardener and stir well. If the ink components are found to be separated, please stir thoroughly before use.
- 3) Poor mixing of base material and hardener will cause quality problems, such as uneven gloss and poor curing.
- 4) The thickness of the ink film should be between 10-20 $\mu$ m (film thickness on the line after baking). If the film thickness is too thin, the solder heat resistance, chemical resistance and gold-plate resistance would be likely reduced. If the film thickness is too thick, lateral erosion, cracking and the dry touch reducing would easily occur.
- 5) When the viscosity of the ink is difficult to print, dilute solvents such as Diethylene Glycol Monoethyle Ether Acetate (Carbitol Acetate) and Reducer-J can be used. Do not use more than 2wt% of dilute solvents (each kilogram of ink can only be added to max 20cc diluted solvents), otherwise the ink will flow vertically, or the ink heat resistance and gold plating resistance will decrease.
- 6) The drying temperature and time will vary according to the drying equipment, production conditions, types of diluted solvents and quality requirements of each factory. Please test to find the range of production.
- 7) The exposure energy and imaging time will vary according to the exposure equipment, production conditions and quality requirements of each factory. Please test to find the range of production.
- 8) Please adjust the composition, temperature, water-spraying pressure and time of the imaging solution according to this material to reduce side erosion and obtain the best effect.
- 9) If the ink curing time or temperature is insufficient, the heat resistance of ink will reduce. However, if the ink curing time or temperature is too long or too high, the gold resistance of ink will decrease. In addition, the thermal curing time of the text ink also has an effect on the solder resist ink.
- 10) The temperature and time required for ink hardening may affect the oxidation of the copper foil of substrate, resulting in discoloration of the ink. So please confirm the

temperature and time before using.

- 11) It must be used after confirming there are no problems with necessary characteristics and workability. In addition, it is necessary to confirm when changing the model.

## 5. Operating Characteristics

### 5.1 Imaging Test

Drying Range (75°C)	40 Min	50 Min	60 Min	70 Min
Imaging	Yes	Yes	Yes	No

### 5.2 Photosensitivity test

Items	Ink Thickness μm	Mylar Under mJ/cm <sup>2</sup>	On Surface mJ/cm <sup>2</sup>	Result
Photosensitivity Kodak No.2	22±2	400	280	8
		500	350	9
		600	420	10
Resolution Between QFP pads	40±2	400	280	80μm
		500	350	70μm
		600	420	60μm

(1 Min Imaging)

## 6. Coating Characteristics

Items	Test Method	Result
Tightness	Taiyo internal method Cross hatch peeling	100 / 100
Pencil hardness	Taiyo internal method No scratch on copper	6H
Heat Resistance	Rosin flux 260°C/30sec, 1cycles	Pass
Acid Resistance	10vol% H2SO4 20°C/20min. (Dip) Tape peeling test	Pass
Alkali 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: $1.2 \times 10^{13} \Omega$ Conditioned: $1.1 \times 10^{11} \Omega$
Dielectric Constant	Taiyo internal method Values at 1MHz Humidification:25- 65°C/90%RH/ cycling for 7 days	Initial: 4.2 Conditioned: 5.1
Dissipation Factor	Taiyo internal method Values at 1MHz Humidification:25- 65°C/90%RH/cycling for 7 days	Initial: 0.027 Conditioned: 0.042

- a) The above information is the test result of Sun Ink (Suzhou) Laboratory. Based on the different production equipment, environment and parameters of each factory, the above information is for reference only.
- b) "6. Coating Characteristics" is the result of "3. Production Process " as the test condition.
- c) Please refer to SDS when operating or using