

# Technical Data Sheet

MS-6171900

MS-6171910

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## Photo Imageable Flexible Solder Mask

# **PSR-9000 FLX501 / CA-90 FLX501** **(PSR-9000TR61719 / CA-90TR61719)**

## 1. FEATURES

**PSR-9000 FLX501(TR61719)/CA-90 FLX501(TR61719)** is dual component type liquid photo imageable solder mask for flexible PCB and screen printing method with the following features.

- Excellent Heat resistance
- Excellent Au plating resistance
- Non Halogen and Low mist

## 2. SPECIFICATION

Color *	Green
Mixing Ratio	Main agent : 75 / Hardener : 25 (by weight)
Viscosity *	150dPa · s (Cone plate type viscosity meter : 5min <sup>-1</sup> /25deg.C)
Solid content *	69wt%
Tack Dry Window *	80deg.C/50min. (Maximum)
Exposure Energy *	400 ~ 600mJ/cm <sup>2</sup> (under Mylar film) 280 ~ 420mJ/cm <sup>2</sup> (on Solder Mask)
Pot Life *	24 Hours (Store in dark place at less than 25deg.C)
Shelf life (Tentative)	Under evaluation (180 days after production stored at dark place , 20degC or below)

\* After mixing

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### 3. PROCESS CONDITIONS

PROCESS	CONDITION	RANGE
PWB	FR-4, thickness 1.6mm	-
Pre-Treatment	Acid treatment - Buff scrubbing	-
Printing	# 100 mesh Tetron screen	#100 ~ 125 mesh Tetron screen
Hold Time	10 min.	10~20 min.
Tack Free	<ul style="list-style-type: none"> <li>• <u>Double-sided printing</u> 1st printing : 80deg.C/20 min 2nd printing: 80deg.C/25 min (Hot air convection oven)</li> <li>• <u>Single-sided printing</u> 80deg.C/30 min (Hot air convection oven)</li> </ul>	80deg.C/15~20 min 80deg.C/20~25 min  80deg.C/30~40 min
Exposure	400mJ/cm <sup>2</sup> (under Mylar film) 280mJ/cm <sup>2</sup> (on Solder Mask)	400mJ ~ 600mJ/cm <sup>2</sup> 280mJ ~ 420mJ/cm <sup>2</sup>
Hold Time	10 min.	10~20 min.
Development	Aqueous alkaline solution : 1wt%-Na <sub>2</sub> CO <sub>3</sub> Temperature of developer : 30deg.C Spray pressure : 0.2MPa Dwelling time : 90 sec.	0.15 ~ 0.25MPa 90 ~ 120 sec.
Water Rinse	Temperature : 25deg.C Spray pressure : 0.1MPa Dwelling time : 45 sec.	30deg.C or below 0.1 ~ 0.15MPa 45 ~ 60 sec.
Post cure	150deg.C/60min. (Hot air convection oven)	

For legend ink process, post cure condition should be 150deg.C/30min before applying legend ink and set 140deg.C/20min X 2 times for final cure.  
150deg.C/60min for post cure is sufficient if no marking ink process.

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## 4. ATTENTION ON EACH PROCESS

- Operation environment should be clean room of 20~25deg.C and 50~60%RH under yellow lamp(UV cut) avoiding fluorescent and sunlight.
- Open up the package when it becomes ambient temperature.  
Stir well before use
- Appropriate coating thickness on copper circuits after thermal cure is 10um ~ 20um. Thinner coating thickness may cause lower resistance in solder heat, chemical and Ni/Au plating. Thick coating thickness may cause undercut and insufficient tackiness.
- Curing condition and window depend on oven type, batch size of work and curing condition of legend ink. Find the optimum condition of your own
- Exposure energy depends on material type of substrate or coating thickness. Find the optimum condition of your own based on resolution (undercut level), gross level, shoot-through, etc
- Control well the quality of developing agent in its density, temperature, spray pressure and dwelling time. Insufficient control may cause deterioration in developing or undercut.
- Set optimum curing condition and window with consideration of curing condition for legend ink. Shortage or excess cure may cause degrade of coating properties.
- In case Ni/Au plating, set optimum curing condition and window with consideration of curing condition for legend ink. Over curing cause lower Ni/Au plating resistance.

## 5. CHARACTERISTICS

### (1) DEVELOPMENT TOLERANCE WINDOW:

Drying time (80deg.C/ min.)	40	50	60	70
Developability	Clean	Clean	Slight Residue	Residue

### (2) PHOTO SENSITIVITY:

Item	Thickness	Energy	Developing time	Sensitivity
Sensitivity Kodak No.2	20 ± 2um	400mJ/cm <sup>2</sup> (280mJ/cm <sup>2</sup> )	90 sec.	6 step
		500mJ/cm <sup>2</sup> (350mJ/cm <sup>2</sup> )		7 step
		600mJ/cm <sup>2</sup> (420mJ/cm <sup>2</sup> )		8 step

The exposure energy is measured on under artwork film (on solder mask) by using ORC HMW-680, 7Kw, metal halide lamp.

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## 6. PROPERTIES

ITEM	TEST METHOD	RESULT
Adhesion	TAIYO Internal Test Method Cross hatch/Tape peeling	100 / 100
Pencil hardness	TAIYO Internal Test Method No scratch on copper surface	5H
Solder heat resistance	Rosin flux 260deg.C/10sec, 1cycle Solder bath floating test	Pass
Solvent resistance	PMA-AC, 20deg.C/20min. immersion Cross hatch/Tape peeling	Pass
Acid resistance	10vol% HC1, H <sub>2</sub> SO <sub>4</sub> 20deg.C/20min. immersion, Cross hatch/Tape peeling	Pass
Alkaline resistance	10wt% NaOH, 20deg.C/20min. immersion, Cross hatch/Tape peeling	Pass
Insulation resistance	IPC comb type B pattern 25-65deg.C, 90% RH DC100V for 7 days Measurement: DC500V / 1min. Value at room temperature	Initial 2.8 x 10 <sup>13</sup> Ohm Conditioned 6.6 x 10 <sup>12</sup> Ohm
Dielectric constant	25-65deg.C, 90% RH DC100V for 7 days Measured at 1MHz / room temperature	Initial      4.3 Conditioned   4.5
Dissipation factor	25-65deg.C, 90% RH DC100V for 7 days Measured at 1MHz / room temperature	Initial      0.030 Conditioned   0.042
Electroless Au plating	Taiyo lab. Method Ni 3um / Au 0.03um	Pass

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

## 7. CAUTION

- All chemicals used in this product might have unknown toxicity. Please handle with your most care referring to the MSDS for use.
- Following substances restricted in EU RoHS Directive are not used in this product.  
Cadmium, Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls(PBB) and Polybrominated Diphenyl Ether(PBDE).