

**DATA SHEET**

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**PSR-4000 WT02 / CA-40 WT02****(PSR-4000HZ/CA-40HZ)****1. FEATURES :**

PSR-4000 WT02 is a liquid photo imageable solder resist ( alkaline development type ), used for screen printing. Non-Discoloration. Halogen-free product.

**2. SPECIFICATION :**

Main agent	PSR-4000 WT02
Hardener	CA-40 WT02
Color*	White
Mixing ratio	Main agent : 80 / Hardener : 20 ( By weight )
Viscosity*	140 ±15 dPa · s (Cone / Plate Viscometer, 5min <sup>-1</sup> / 25°C)
Tack free window*	75°C / 60 min ( Maximum )
Exposure energy*	400 ~ 600 mJ/cm <sup>2</sup> ( on the solder mask )
Pot life*	24 hours ( stored in dark place at less than 25°C )
Shelf life**	6 months ( stored in dark place at than 25°C )

\* : After mixing

\*\* : After manufacturing

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/CA-40 WT02**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	<ul style="list-style-type: none"> <li>➤ One side each exposure 1 st printing : 75°C / 20 min 2nd printing : 75°C / 25 min</li> <li>➤ Both sides simultaneous exposure 75°C / 30 min</li> </ul>	75°C / 20 ~ 25 min 75°C / 25 ~ 30 min 75°C / 25 ~ 55 min
Exposure	500 mJ/cm <sup>2</sup> ( on the solder mask )	400 ~ 600 mJ/cm <sup>2</sup>
Hold time	10 min	10 ~ 20 min
Development	Aqueous alkaline solution : 1 wt% Na <sub>2</sub> CO <sub>3</sub> Temperature of developer : 30°C Spray pressure : 0.196 MPa Developing time : 90 sec	0.2 ~ 0.25 MPa 60 ~ 120 sec
Post cure	Hot air convection oven 150°C/60min	

**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 μm (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.

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- 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 (75°C / min)	50	55	60	65
Developability	○	○	○	NG

#### (2) PHOTO SENSITIVITY :

Item	Thickness	Energy	Developing time	Sensitivity
Sensitivity Kodak No.2 (Step density tablet)	22 ± 2 μm	400 mJ/cm <sup>2</sup>	90 sec.	9 steps
		500 mJ/cm <sup>2</sup>		10 steps
		600 mJ/cm <sup>2</sup>		11 steps
Resolution (Between QFP)	40 ± 2 μm	400 mJ/cm <sup>2</sup>	90 sec.	60 μm
		500 mJ/cm <sup>2</sup>		50 μm
		600 mJ/cm <sup>2</sup>		50 μm

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## (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
Solder heat resistance	Solder float test : Rosin flux, 260°C / 30 sec (1 cycle)	Pass
Solvent resistance	PMA dipping, room temp./ 30 min Scotch tape stripping	Pass
Acid resistance	10 vol % H <sub>2</sub> SO <sub>4</sub> , room temp./ 30 min Scotch tape stripping	Pass
Alkaline resistance	10 wt% NaOH, room temp./ 30 min Scotch tape stripping	Pass
Insulation resistance	IPC comb type B pattern Humidification : 25~65°C cycle 90% RH DC100V loading for 7 days Measurement : After the above treatment, loading DC500V for 1 minute at room temperature	Initial : 2.0 ×10 <sup>13</sup> Ω After : 5.7 ×10 <sup>12</sup> Ω
Dielectric constant	JIS C6481 1 MHz Humidification : 25~65°C cycle 90% RH for 7 days	Initial : 6.7 After : 7.4
Dissipation factor	JIS C6481 1 MHz Humidification : 25~65°C cycle 90% RH for 7 days	Initial : 0.032 After : 0.050
Electroless gold plating	Ni 3 μm Au 0.03 μm	Passed
Halogen contents	Calculated by use raw materials (Calculation value)	Cl ≤ 900 ppm Br ≤ 900 ppm Cl+Br ≤ 1,500 ppm

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

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**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