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Silver Paste for Electrode Material



## 2. GENERAL PROCESS

Control the recommendation listed in below properly.

When it is not like that, this is responsible for quality and reliability deterioration.

### 1) Pre-treatment

- Acid treatment → Grinding (physical, chemical) → Rinse → Drying
- The contaminations of board cause the conductivity, adhesion and reliability deterioration. So that, Clean, Drying the board to avoid any trace of oil, grease and dust.

### 2) Screen printing

- Before "TSP-3000 MS001" is used, it must be made absolutely homogeneous by stirring it in original container at 50-100 rpm.
- To adjust the viscosity, apply the TYK diluent as regulator agent
- Recommendation Screen
  - : 120 ~ 180mesh Polyester screen
  - : Emulsion thickness is 60-100 microns, with solvents resistant.
- Recommendation Squeeze
  - : Polyurethane squeegee(hardness:70~80), A bevel between squeegee and screen is necessary to force with 65-80 degrees angle.
- Rinse of Screen : Solvent of Carbitol or Cellosolve type.

### 3) Drying and Curing

- Drying : Process for less Void at 3~5min. at 20~30 °C (Room temperature)
- Curing : Within 10~30minute at 120 ~ 150 °C.(Recommend : 30min. at 120 °C)
- Curing type : Perpendicular or horizontal type

### 3. PROPERTIES OF PRODUCT

#### 1) Electrical property

Items	Test method	Test Standard	Test Result
Volume Resistivity	120 °C, 30min	Below $6.0 \times 10^{-4} \Omega \text{ cm}$	Pass
Sheet Resistivity	120 °C, 30min	Below $0.4 \Omega/\square(15 \mu\text{m})$	Pass

#### 2) Coating Characteristics

Items	Test Condition	Test Standard	Test Result
Adhesion	Cross cut 10X10	Must Remain 10X10	Pass
Pencil Hardness	Pencil Hardness Test	$\geq 1\text{H}$	Pass

#### 3) Reliability Characteristics

Items	Test Condition	Test Standard	Test Result
Constant Temp. & Humi. test	60 °C, 90%RH, 240hr	Resistivity Change rate : Below $\pm 100\%$	Pass
PCT	121 °C, 95%RH, 2atm, 8hr	Resistivity Change rate : Below $\pm 100\%$	Pass

Note : All data mentioned above in this technical data sheet are based on our laboratory test result

## 4. TROUBLE SHOOTING

<b>Problem</b>	<b>Solution</b>
Printability	<ul style="list-style-type: none"><li>- Check Printing conditions</li><li>- Adjust squeegee angle</li><li>- Adjust Paste viscosity</li></ul>
Poor adhesion to substrate	<ul style="list-style-type: none"><li>- Increase Curing time</li><li>- Clean board better prior to printing</li><li>- Pre-treatment</li></ul>
Poor electrical conductivity	<ul style="list-style-type: none"><li>- Reduce Solvent content</li><li>- Increase Dry and Curing time</li><li>- Check Pre-treatment process</li><li>- Reduce time between washing and printing process</li></ul>

\* If other problem encounter, Please contact our Sales Department and Institute of Technology.

## 5. CAUTION FOR SAFETY

- Before use, read caution for safety and use exactly.
- The caution for safety is to prevent danger or damage beforehand in using the product.
- Make the workers to know the caution for safety in catalogue.



### WARNING

- \* Use a suitable conveyance tool at transfer of heavy thing. When convey by oneself, take right posture. Excessive force may cause injury and lumbago.
- \* When use, put protection mask, goggle and protection gloves etc. Injury can happen by inhalation and contact in a long or short time.
- \* Install local exhauster in operation room. While using, the case which long time or excess amount will inhale the fume it is nauseous, vomit, dizzy and the internal organs damage etc. will be able to occur.
- \* After using, annul the empty receptacle without another application.
- \* Dispose of the waste according to related law. It can cause serious environmental pollution that incinerate or abandon the waste in land and water.

### CAUTION AT USE

- \* Avoid direct sunlight, heat source and fire.
- \* keep the optimum temperature(10°C~20°C). Use the inks at least 1hr after leaving alone at room temperature to intercept the inflow of water and make the state stable.
- \* Before use, please homogenized for about 0.5-1 hours using a slow mixer at 50-100 rpm.
- \* Do not use the product when the shelf-life is expired.
- \* Keep the optimum ventilation and temperature condition of curing chamber.
- \* Clean the board to avoid any trace of copper oxide, oil, grease of dust.

Misapplication different from above contents results in quality and reliability deterioration.

