TECHNICAL DATA SHEET

S-200W LP

WHITE THERMAL CURE LEGEND INK

- **Screen Print Application**
- **Longer Pot Life (minimum of 14 days)**
- **Meets NASA Outgas Requirement**
- **RoHS Compliant**
- **Excellent Heat Resistance in HASL**
- **Low Odor**

Revised April 14, 2016

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PROCESSING PARAMETERS FOR S-200W LP LEGEND INK

Taiyo S-200W LP is a two-component, thermal curable, white legend ink having outstanding printability, adhesion, and color retention. **S-200W LP** is available in 1 kg-set size. All Taiyo America products comply with the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment.

S-200W LP COMPONENTS

S-200W LP	Part A	/	Part B
Mixing Ratio	95 parts		5 parts
Color	White		White
Warranty Period	9 months at ≤ 68°F		

MIXING

S-200W LP is supplied in pre-measured containers with a mix ratio by weight of 95 parts **S-200 Part A** and 5 parts **S-200 Part B. S-200W LP** can be mixed by hand with a mixing spatula for 5 – 10 minutes. Mixing can be done with a mechanical mixer at low speeds to minimize shear thinning for 5 – 10 minutes. Also, mixing can be done with a paint shaker for 5 minutes. The S-200 may be diluted with glycol ether and propylene glycol ether solvents.

PRE-CLEANING

Prior to legend ink application, the surface needs to be free of contaminates. We recommend that the surface be cleaned chemically to make sure there are no contaminates on the surface. It is not a good idea to mechanically scrub the solder mask prior to applying the legend ink.

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SCREEN PRINTING

Method: Single Sided and Double Sided Screening

- Screen Mesh: 200 – 305
- Screen Mesh Angle: 22.5° Bias
- Screen Tension: 20 - 28 Newtons
- Squeegee: 60 – 80 durometer
- Squeegee Angle: 27 – 35°
- Printing Mode: Flood / Print

FINAL CURE

S-200W LP needs to be thermally cured to insure optimal final property performance. Thermal curing can be done in a batch oven or conveyorized oven.

- Temperature: 300°F (149°C)
- Time at Temperature: 25 – 30 minutes

For Process Optimization please contact your local Taiyo America Representative

Taiyo America, Inc. (TAIYO) warrants its products to be free from defects in materials and workmanship for the specified warranty period **(S-200W LP Warranty period is 9 Months)** provided the customer has, at all times, stored the ink at a temperature of 68°F or less. TAIYO accepts no responsibility or liability for damages, whether direct, indirect, or consequential, resulting from failure in the performance of its products. If a TAIYO product is found to be defective in material or workmanship, its liability is limited to the purchase price of the product found to be defective. TAIYO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. TAIYO'S obligation under this warranty shall not include any transportation charges or costs of installation or any liability for direct, indirect, or consequential damages or delay. If requested by TAIYO, products for which a warranty claim is made are to be returned transportation prepaid to TAIYO'S factory. Any improper use or any alteration of TAIYO'S product by the customer, as in TAIYO'S judgment affects the product materially and adversely, shall void this limited warranty.

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FINAL PROPERTIES FOR S-200W LP LEGEND INK

S-200W LP: CID A-A-56032D PERFORMANCE REQUIREMENTS

Test	A-A-56032D Paragraph	Test Method / Requirement	Results
Adhesion	3.7	Cured ink impressions shall not deteriorate when subjected to trichloroethylene vapors at 86.5° to 88°C for a period of not less than three minutes and not greater than six minutes.	Pass
Electrical Resistance (Type II) Before Conditioning After Conditioning	3.8	 1×10^{12} ohms minimum 1×10^{10} ohms minimum	 Pass (1.9×10^{13}) Pass (8.6×10^{12})
Abrasion Resistance	3.9.1	Cured ink impressions shall retain their legibility after subjection to 300 to 303 revolutions of the CS-10 abrasive wheel while under a minimum load of 2.2 pounds in accordance with ASTM D4060.	Pass (303 revolutions)
Chemical Resistance	3.9.2	Cured ink impressions shall retain their legibility when immersed for a minimum of 30 minutes in water, denatured ethyl alcohol, and non-ODC (Ozone Depleting Chemical) cleaning solvent.	Pass
Chemical Resistance (Type II)	3.9.2.1	In addition to 3.9.2, Type II cured ink shall be resistant to hot solder and solder flux.	Pass
Salt Spray Resistance	3.9.3	Cured ink impressions shall not deteriorate when exposed to a 5 percent salt spray solution at 33° to 37° C for a period of not less than 48 hours.	Pass
Light Fastness	3.9.4	Cured ink impressions shall not fade and shall remain legible when tested by a light fastness test. To determine conformance, one half of the surface of the test specimens shall be covered to obscure light, and the remaining half shall be exposed for 24 hours to the light source outlined in ASTM G153 using daylight filter and exposure cycle 7 or ASTM G155 using window glass filter and exposure cycle 4.	Pass (ASTM G155 using window glass and exposure cycle 4)
Stability	3.9.5	Cured ink impressions shall not fade, chip, peel, or flow and shall remain legible when exposed to a temperature of 118° to +/- 3°C for a period of not less than 24 hours.	Pass
Fungus Resistance	3.9.6	Cured ink impressions shall not support fungi growth when inspected.	Pass

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FINAL PROPERTIES FOR S-200W LP LEGEND INK

S-200W LP: IPC-4781 MATERIAL SUPPLIER TESTING REQUIREMENTS

Test	IPC-4781 Paragraph	Requirement	Results
Hardness	3.5.1	Minimum "2H"	Pass - 7H
Adhesion to Solder Mask Materials	3.5.2.1	Zero percent loss over base laminate and solder mask	Pass
Resistance to Solvents and Cleaning Agents	3.6.1	The cured legend and marking ink material shall not exhibit delamination, cracks, tackiness, swelling, or permanent degradation when exposed to the conditions listed in IPC-TM-650, Method 2.3.42	Pass
Hydrolytic Stability / Aging	3.6.2	No change after 28 days of 95 – 99°C and 90 – 98% RH	Pass
Resistance to Tin-Lead Solder	3.7.2	The cured legend and marking ink shall completely resist the adherence of solder and shall remain legible.	Pass
Resistance to Lead-Free Solder	3.7.3	The cured legend and marking ink shall completely resist the adherence of solder and shall remain legible.	Pass
Simulation of Lead-Free Reflow	3.7.3.1	The cured legend and marking ink shall completely resist the adherence of solder and shall remain legible.	Pass
M&IR (SIR) Before Soldering – In Chamber Before Soldering – Out of Chamber After Soldering – In Chamber After Soldering – Out of Chamber	3.9.1	 5×10^8 ohms minimum 5×10^8 ohms minimum 5×10^8 ohms minimum 5×10^8 ohms minimum	 Pass(4.3×10^9 ohms) Pass(6.2×10^{12} ohms) Pass(1.3×10^9 ohms) Pass(8.6×10^{12} ohms)
Electrochemical Migration	3.9.2	5×10^8 ohms minimum, no dendritic growth	Pass(6.21×10^{12} ohms)
Thermal Shock	3.9.3	No blistering, crazing, or delamination	Pass
Cure	3.2.7	Ref.: 3.5.1, 3.5.2. 3.6.1, 3.7.2, 3.7.3	Pass
Non-Nutrient	3.2.8	Does not contribute to biological growth	Pass
Visual Requirements	3.3	Uniform in appearance	Pass

Additional Tests / Results

TEST	REQUIREMENT	RESULT
Outgassing Test ASTM E-595-90 Processing Condition 150°C / 60 minutes	TML ≤ 1 % CVCM ≤ 0.10%	TML=0.56% CVCM=0.02%

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