TECHNICAL DATA SHEET

S-200E

BLACK THERMAL CURE LEGEND INK

- **Screen Print Application**
- **Available in Black**
- **Withstands ENIG & Immersion Tin**
- **RoHS Compliant**
- **Excellent Heat Resistance in HASL**
- **Low Odor**

Revised September 4, 2019

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PROCESSING PARAMETERS FOR S-200E LEGEND INK

Taiyo America's **S-200E (black)** is a two-component, thermal curable legend ink having outstanding printability, adhesion, and color retention. **S-200E** legend ink is available in 1 kg-set size. **S-200E** meets the performance requirements of A-A-56032 as it applies to printed circuit board application. 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-200E COMPONENTS

	S-200E / HD-3
Mixing Ratio	100 parts / 8 parts
Color	Black / White
Warranty Period	6 months at ≤ 68°F

MIXING

S-200E is supplied in pre-measured containers with a mix ratio by weight of 100 parts **S-200E** and 8 parts **HD-3. S-200Es** 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 pot life after mixing is 8 hours. 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-200E 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-200E/HD-3 Warranty period is 6 Months)** provided the customer has, at all times, stored the ink at a temperature of 68ºF 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-200E LEGEND INK

Test	Test Method / Requirement	Results
Pencil Hardness	Internal Test	8H
Adhesion after Cure	Rigid – Cu, Ni, FR-4	Pass
Adhesion after Soldering	Internal Tape Test	Pass
Resistance to Solder	No Solder Sticking	Pass

CID-A-A-56032D Performance Requirements

Test	A-A-56032D Paragraph	Requirements	Results
Adhesion	3.7	Cured ink impressions shall not deteriorate when subjected to trichloroethylene vapors at 86.5 to 88C 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 (2.80×10^{13} ohms) (7.36×10^{11} ohms)
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 2.2pounds in accordance with ASTM D4060.	Pass
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 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 37C for a period of not less than 48 hours.	Pass on FR-4 Failed on Glass
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 the 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
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 +/- 3C 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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