



- 1 FEATURES**
- 2 GENERAL PROCESS**
- 3 PROPERTIES OF PRODUCT**
- 4 TROUBLE SHOOTING**
- 5 CAUTION FOR SAFETY**

ENACTMENT DATE : Oct, 23, 2001

REVISION DATE : Jun., 30, 2009 / Rev. (2)

TAIYO INK MFG. CO., (KOREA) LTD / R&D Institute

Head office & factory : 1058-8, SINGIL-DONG, DANWON-GU, ANSAN-CITY, KYNGKI-DO, KOREA.

Business department : TEL 031) 491 – 9250(301-305) FAX 031) 491-7671

Research institute : TEL 031) 491 – 9250(401-413) FAX 031) 492-2710

Thermal Curable Marking Ink

S-200 W

1. FEATURES

- S-200 W is thermal curable marking ink which has excellent properties : Excellent printability, adhesion and color retention.
- S-200 W is environment-friendly product. It does not contain Heavy metals(Cd, Hg, Cr, Pb) and azo compound.

1) General specifications

Main Agent	S-200 W
Hardener	HD-3
Color	White
Mixing Ratio	Main Agent : 100 Hardener : 8 (Weight Ratio)
Viscosity	230 Ps (by EHD type Viscometer at 5rpm/ 25 ℃)
N.V.A	85 Wt%
Specific Gravity	1.65
Curing Conditions	150 ℃ × 20min (Hot Air Convection Oven)
Pot-Life	8 hours after mixing (20~25 ℃)
Shelf- Life	6 month after manufacturing (below 10~20 ℃ in dark room)

- Viscosity and mixing viscosity is changed according to using conditions.

2) Lot No. of Product

Lot No.	2002	10	01	1	01
Explanation	Year	Month	Day	Divide	Number

2. GENERAL PROCESS

Control the recommendation listed in below properly, otherwise it is responsible for quality deterioration.

1) Process Flow Chart and Parameter

- (1) Screen Printing : 180 ~ 225 Mesh/Inch
- (2) Thermal cure : 150 °C × 20 min. (Hot Air Convection Oven)

2) Recommendations Process

- (1) Keep the operation room cleaned. The product must be protected for an alien substance and dust.
- (2) Contaminations of the board cause the quality deterioration.
- (3) As to the operation environment, it is desirable to deal with ink in the clean room at 20~25 °C , 50~60%RH for printing. Avoid direct exposure to sunlight.
- (4) The adequate thickness is 15~20 μm . Thin coating possibly reduces its solder heat resistance and acid resistance.
- (5) It is desirable to use ink without dilution. Even if you feel difficulty of printing by high viscosity, please dilute ink using Reducer as little as possible(max 2wt%) because over dilution may degrade properties.
- (6) Please set the thermal cure conditions after confirmation test because they are influenced by the type of the drying machine, the quantity of the boards to be dried and so on. Poor curing or over curing may cause quality deterioration.

3. PROPERTIES OF PRODUCT

(1) General Properties

Test Items	Test condition	Test standard	Test Result
Pencil Hardness	5H (on copper)	The copper must not be seen	Pass
Solder Heat Resistance	10 sec \times 1 / 260 \pm 5	No ink peeling	Pass
Adhesion	Tape Test after Cross Cut 10 \times 10	Must remain 100/100	Pass
Appearance / color	Macrography	Identical with past Lot.	Pass (White)
Solvent Resistance	Dipping PGM- Ac 30 min/20	No peeling by scrubbing	Pass
Acid & Alkaline Resistance	10 Vol.% H ₂ SO ₄ 20 \times 30min Dipping 10 Wt.% NaOH 20 \times 30min Dippin Tape test	No ink peeling	Pass

(2) Reliability

Dielectric strength	- Raise DC 500V/sec	No change of ink in DC 500V	Pass (0.95Kvt)
Insulation Resistance	- 1min maintenance in DC100V - 1min maintenance in DC100V, after HASL	More than 5×10^8 More than 5×10^8	- Pass (2.00×10^{12}) - Pass (7.40×10^{11})
Moisture and Insulation Resistance	- 1min maintenance in DC100V, after 50 \times 24hr - 1min maintenance in DC100V, after 25 ~65 \times 85%RH \times D.C50volt \times 7day (20Cycle)	More than 5×10^8 More than 5×10^8	- Pass (1.72×10^{13}) - Pass (1.00×10^{11})
Electro Migration	- 85 \times 90%RH \times DC 10V \times 168 hr - Evaluate by decuple magnifying	More than 2×10^6 No change of appearance	Pass
Hydrolytic Stability	- 97 \pm 2 90-98%RH 28days - Macrography and Ink surface rub	External appearance, restless, Crack	Pass
Thermal Shock	- 15min/125 \times 15min/-65 (100cycles) - Evaluate by 30times magnifying	No change of color, crack and restless	Pass

Note : The test data above is based on our internal lab test result as reference, not to guarantee the identical result at customer's site. The test data is also subject to change without notice.

4. TROUBLE SHOOTING

Divide	Problem happens	Action	Note
1	Change of Color	- Ink thickness - Temperature and Time of curing.	
2	breeding	- Setting of Printing condition - Pot-life of Ink	
3	Skip	- Setting of Printing condition	
4	Ink Adhesion inferiority	- Pot-life of Ink - Cure condition	

- Inquire additional questions of business department or R&D institute of TAIYO INK MFG. CO.,

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 catalog.



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.
- * Necessarily, keep the optimum temperature(10 ~ 20). Use the inks at least 1day after leaving alone at recommendation temperature to intercept the inflow of water and make the state stable.
- * Do not use the product when the shelf-life is expired.
- * Observe mixture ratio of main agent and hardener. And do not use as other product mixed.
- * When the pot-life is expired or the ink is leaved alone long hours, don't use.

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