

**TECHNICAL
DATA SHEET**Zaristo 125G
MS-7080601
Feb.2016

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Thermal Cure Dry-Film type Build-up Material

Zaristo 125G

(TR70806)

1. Features

Zaristo 125G (TR70806) is thermally curable Dry film type Build-up material for Semi-Additive Process (SAP).

This material, with its epoxy resin system, offers excellent film characteristics (such as High Tg, etc...) , Low surface Profile after Wet desmear and stable Peel strength

2. General Specifications

Color	Green
Material Thickness	20~80um
Width	Up to 516mm
Film Specification	Protect Film :PP-15um (Matte) Carrier Film :PET-38um (Gloss) ※the inside :PP/the outside :PET
Lamination Condition	Laminate Zone Temp.: 70deg.C/Cycle Time: 60sec Press Zone Temp.: 70deg.C/Cycle Time: 60sec (2stage Vacuum & pressure laminator)
Standard curing Condition	After Laminate :180deg.C/30min (w/o PET) After E'less Copper :150deg.C/30min (Anneal) After Electro Copper :190deg.C/60min (Anneal)
Shelf life ※tentative	365 days after production (Stored in dark place at less than -15deg.C) ※Under Evaluation

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3. Process Condition for SAP

Pretreatment:	CZ-8100+CL-8300 Etch-rate 1um (MEC)
Lamination:	Remove Protect Film (PP-15um) and lamination Machine: 2stage Vacuum Laminator CVP-300 (Nichigo-Morton) - Laminate Zone condition Temp. : 70 deg.C Press : 0.5 MPa Cycle Time : 15sec / 5sec / 40sec (Vacuum / Slap-down / Laminate) Vacuum : 4hPa - Press Zone condition Temp. : 70deg.C Pressure : 0.5~0.8MPa Cycle time : 60sec
Remove Carrier Film	PET-38um
Thermal cure:	180 deg.C / 30 min (in hot air convection oven)
CO2 Laser Process:	Laser ability for Target : Top= 65um.(Resin thickness on Cu = 40um) Machine example : LC-2K212 (Hitachi Via) Example of Laser Condition. Aperture diameter / Frequency / Power / Pulse width / Shot / Mode 3.1mm / 5kHz / 1.5W / 20microsec / 3shot / Burst mode
KMnO4 Desmear:	Chemicals: ATOTECH Sweller 60 deg.C / 5min (Securiganth P Sweller) Etching 80 deg.C / 20min (Conmact CP Concentrate) Reduction: 40deg.C / 5min (Securiganth P 500 Reduction Solution(DK))
E'less Copper	Chemicals: Uyemura Cleaner: 40deg.C / 5min (MCD-PL) Pre dip 25deg.C / 2min (MCD-2, 96% H ₂ SO ₄) Activator 40deg.C / 5min (MAT-SP, 1N-NaOH) Reducer 35deg.C / 3min (MRD-2-C, MAB-4-C, MAB-4-A) Accelerator 25deg.C / 1min (MEL-3-A) E'less copper 36deg.C / 20min (PEA-6sereis)
Anneal	150 deg.C / 30 min (in hot air convection oven)
Electro Copper Plating	Chemicals: ATOTECH Acid cleaner 23deg.C / 5min (Acid cleaner FR) Acid Rinse 23deg.C / 1min (96% H ₂ SO ₄) Temperature 23deg.C (Electro Copper temp.) Current density 2A/dm ²
Anneal	190deg.C / 60min

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4. Attention on each Process

- ◇ Recommendable workshop condition: Operation in a clean room of ambient temperature at 20-25deg.C/50-70%RH.
- ◇ Open up the package when the product becomes ambient temperature not to cause dewing.
- ◇ Thaw the product before use as conditions described below;
 1. Thaw more than 4 hrs. in room temperature when kept at -15deg.C
 2. Or, thaw in the clean room.Furthermore, all the product must be used within 48 hrs. at room temperature.
- ◇ As laminating condition is variable depending on the type of machine, the size of board, etc., please set it optimum to your process after adjustment.
- ◇ As curing condition depends on the type of drying oven, the board quantity to input, etc., set condition to your process should be decided after testing.
Both shortage and excess of cure may affect properties of the coating film.
- ◇ As laser process condition is variable depending on the type of machine, etc., please set it optimum to your process after adjustment.
- ◇ The laser process condition is an example which process 40μm thick Resin on Copper.
- ◇ KMnO₄ Desmear , E'less copper and Electro copper condition set it as Build-up material for Semi-Additive Process (SAP). Please set it optimum to your process after adjustment.

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5. Properties

Item	Test condition	Results
Adhesion	◇ Test method: JIS-K-5600	100/100 No peel off
Pencil Hardness	◇ Test method: JIS-K-5600-5-4 ◇ Weight: 1000g	9H Pass
Solvent resistance	Tape peel test after immersion in PGM-AC, 20deg.C, 30 minutes	Pass
Chemical resistance (Alkaline)	Tape peel test after immersion in 10wt % NaOH, 20deg.C, 30 minutes	Pass
Pressure cooker test (PCT)	◇ Pre condition JEDEC L2a (C-120/60/60) ◇ Air Reflow: 260deg.C x 3 cycle ◇ Tape peel test after 121deg.C, 100% (Full), 2atm, 200hours	No peel off
BHAST Reliability Test	◇ DF Thickness: 40um ◇ Test coupon L/S=20um/10um Comb pattern ◇ Pre condition JEDEC L2a (C-120/60/60) ◇ Air Reflow: 260deg.C x 3 cycle ◇ BHAST Reliability Test ($\leq 1.0 \times E+06 \Omega$) 130deg.C / 85%RH / DC12V / N=5	200hrs Pass
Young's Modulus	◇ Pull mode Condition: room temperature Tensile speed : 1mm/min N=5 average	4.5 – 5.5GPa
Tensile Strength		90 – 100MPa
Elongation		3.0 – 4.0%
Tg	◇ TMA method: JIS-C6481 Tensile Method: IPC-TM650 Heating rate : 10C/min $\alpha 1$ (25 – 100deg.C) $\alpha 2$ (200 – 250deg.C)	165 – 175deg.C
CTE $\alpha 1$		25 – 30ppm
CTE $\alpha 2$		95 – 105ppm
Ra after Desmear	◇ Laser Microscope (Keyence)	0.35 – 0.45um
Peel strength	◇ Test method: JIS-C-6481 ◇ Copper thickness: 25um	5 – 6N/cm

◇ Remarks: The contents of this technical datasheet are based on the results of our extensive experiments and only for reference, not to guarantee the same in your process.

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6. Attention

*All test data shown above on this technical data sheet are based on our laboratory test result and only for reference, not guarantee the same on your process.

*All chemicals used in this product might have unknown toxicity. Please handle with your most care referring to the MSDS for use.

*No intentional use of RoHS 2.0subjected 10 substances (Lead, Cadmium, Mercury, Hexavalent-chromium, PBBs, PBDEs, DEHP, DBP, BBP and DIBP) for this product.