TECHNICAL DATA SHEET

TAIYO THP-100DX1 (GF)

(UL Name: THP-100GF)

THERMAL CURABLE GAP FILLING DIELECTRIC

- **Screen Print Application with Flame Resistant Properties**
- **High Tg (160˚C) and Low CTE (32/115 ppm)**
- **Very Low Shrinkage and Ease of Planarization**
- **No Chemical Attack through Desmear**
- **Halogen Free and RoHS Compliant**
- **Excellent Adhesion between layers**
- **Used to fill high copper inner layers to achieve a planar outer layers**
- **Compatible with Lead-Free Processing**

TAIYO AMERICA

Revised November 2012

Always on your side.

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TECHNICAL DATA SHEET

PROCESSING PARAMETERS FOR THP-100DX1 (GF)

THP-100DX1 (GF) is a single-component thermal cure intermediate dielectric material with flame resistant properties and it can be applied by screen printing. **THP-100DX1 (GF)** is for filling high copper inner layers to achieve planar outer layers. **THP-100DX1 (GF)** has high heat resistance, excellent adhesion between layers, high insulation resistance and excellent adhesion to copper with low surface profiles. 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.

FINAL PROPERTIES

Test	Results
Color	Light Brown
Adhesion cross cut	100/100
Pencil Hardness	7H
Halogen Level	247 ppm
Outgassing by ASTM E 595 (TML <1.0% and CVCM <0.1%)	TML = 0.27% - Pass CVCM = 0.01% - Pass
Dissipation factor measured at 1 MHz, at room temperature, after the humidity cycling of 25 to 65 °C cycles, 90 %RH, 7 days	Initial: 0.02 Conditioned: 0.03
Solder Resistance Rosin Flux, 260°C/20secs/2cycles	Pass
Water Absorption - PCT 120°C/100%RH/12hrs	0.9%
Water Absorption – DI water immersion for 24 hours at 23°C	0.6%
T(g) – TMA Tensile Method	160°C
CTE – TMA Tensile Method (α1/α2)	32/115 ppm
T(g) – TMA Expansion Method	155°C
CTE – TMA Expansion Method (α1/α2)	32/81 ppm
Peel Strength – Vertical direction, 50 mm/min	5 N/cm minimum

PRODUCT STORAGE

THP-100DX1 (GF) is supplied in a 1.3-kg containers. It needs to be stored frozen at or below 14˚F (-10˚C) in accordance to our warranty. Other storage guidelines are listed below:

Storage Temperature	Recommended Maximum Storage Days
Freezer: 14˚F (-10˚C)	365
Refrigerated: 41˚F (5˚C)	180
Room Temperature: 68˚F (20˚C)	30

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PRE-CLEANING

Prior to application, the inner layer surface needs to be cleaned. Various cleaning methods include Pumice, Aluminum Oxide, Mechanical Brush, and Chemical Clean. All of these methods will provide a clean surface for the application of **THP-100DX1 (GF)**. Hold time after cleaning the printed circuit board should be held to a minimum to reduce the oxidation of the copper surfaces.

SCREEN PRINTING

Method: Single Sided and Double Sided Screening

- Screen Mesh: 80 – 200
- Screen Mesh Angle: 22.5° Bias
- Screen Tension: 20 - 28 Newtons
- Squeegee: 60 – 80 durometer
- Squeegee Angle: 27 – 35°
- Printing Mode: Flood / Print / Print
- Flood Pressure: 20 – 30 psi
- Printing Speed: 2.0 – 9.9 inches/sec
- Printing Pressure: 60 – 100 psi

PRE-CURE

To build up **THP-100DX1 (GF)** it may require multiple coating applications to reach the desired thickness. Typical pre-cure condition between layers is as followed:

- Oven Temperature: 100°C (212°F)
- Time per layer of drying: 1 hour

THERMAL CURE

THP-100DX1 (GF) requires a thermal cure to insure optimal final property performance. Thermal curing can be achieved during the lamination cycle. Typical lamination cycles are:

- Temperature: 190°C (375°F)
- Time at Temperature: 90 minutes
- Pressure: 18 kg/cm^2 (256 psi)

For Process Optimization please contact your local Taiyo America Representative

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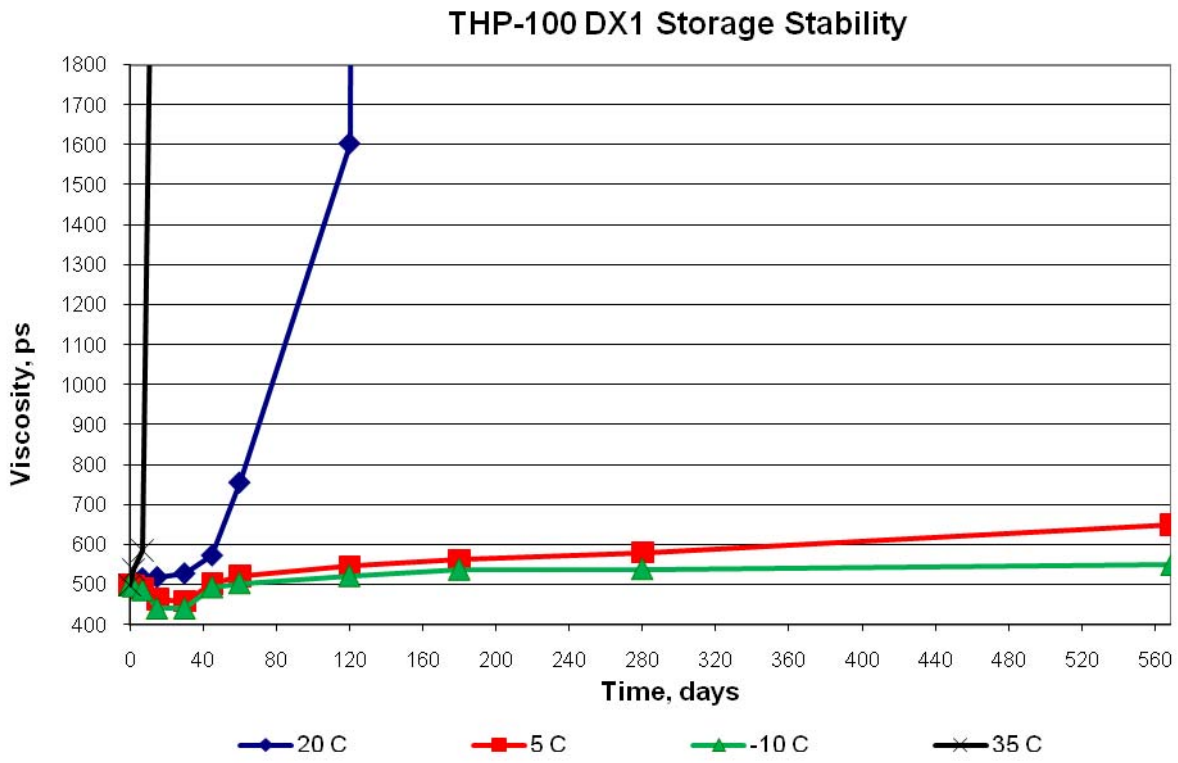
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STORAGE CONDITION RECOMMENDATIONS

THP-100DX1 (GF) is a highly-reactive, one-part epoxy material and, as such, the viscosity stability is greatly affected by the storage temperature. The table and chart below are intended as a guide to the user, and do not constitute or imply warranty of the product under each condition shown.

Storage Temperature	Shelf Life (Days)
Room Temp. (20°C)	**30**
Refrigerated (5°C)	**180**
Frozen (-10°C)	**365**



Taiyo America, Inc. (TAIYO) warrants its products to be free from defects in materials and workmanship for the specified warranty period **(THP-100DX1 (GF) Warranty period is 12 Months)** provided the customer has, at all times, stored the ink at a temperature of 14°F (-10°C) 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.