



# S1170

(ANSI:FR-4) Excellent Thermal Resistance / High Tg

## 特点

- 无铅兼容FR-4板材。
- 高Tg170℃(DSC)。
- 高耐热性。
- 优异的Anti-CAF性能。
- 低Z-CTE。
- 低吸水率。

## FEATURES

- Lead-free compatible FR-4 laminate.
- High Tg 170℃(DSC).
- Excellent thermal stability.
- Excellent anti-CAF performance.
- Low Z-axis CTE.
- Low water absorption.

## 应用领域

适合于高多层印制线路板，广泛应用于计算机与通讯设备，工业控制用高档仪器仪表、路由器等。

## APPLICATIONS

Suitable for high-count layer PCB. Widely used in computer, communication equipment, precise apparatus and instrument, router, etc.

## GENERAL PROPERTIES

| Test Item                  |           | Treatment Condition                 | Unit  | Property Data           |                         |
|----------------------------|-----------|-------------------------------------|-------|-------------------------|-------------------------|
|                            |           |                                     |       | SPEC                    | Typical Value           |
| Tg                         |           | DSC                                 | ℃     | ≥170                    | 175                     |
| Flammability               |           | C-48/23/50                          | -     | V-0                     | V-0                     |
|                            |           | E-24/125+des                        |       |                         |                         |
| Volume Resistivity         |           | After moisture resistance           | MΩ-cm | ≥10 <sup>6</sup>        | 3.5×10 <sup>8</sup>     |
|                            |           | E-24/125                            |       | ≥10 <sup>3</sup>        | 2.3×10 <sup>6</sup>     |
| Surface Resistivity        |           | After moisture resistance           | MΩ    | ≥10 <sup>4</sup>        | 1.8×10 <sup>5</sup>     |
|                            |           | E-24/125                            |       | ≥10 <sup>3</sup>        | 5.1×10 <sup>6</sup>     |
| Arc Resistance             |           | D-48/50+D-0.5/23                    | S     | ≥60                     | 123                     |
| Dielectric Breakdown       |           | D-48/50+D-0.5/23                    | KV    | ≥40                     | 62                      |
| Dielectric Constant (1MHz) |           | C-24/23/50                          | -     | ≤5.4                    | 4.6                     |
| Dissipation Factor (1MHz)  |           | C-24/23/50                          | -     | ≤0.035                  | 0.012                   |
| Thermal Stress             | Unetched  | 288℃, solder dip                    | -     | >10s<br>No delamination | 100s<br>No delamination |
|                            | Etched    |                                     |       |                         |                         |
| Peel Strength              | 1oz       | 288℃, 10s                           | N/mm  | ≥1.05                   | 1.45                    |
|                            | Cu. Foil  | 125℃                                |       | ≥0.70                   | 1.23                    |
| Flexural Strength          | LW        | A                                   | MPa   | ≥415                    | 587                     |
|                            | CW        |                                     |       | ≥345                    | 531                     |
| Water Absorption           |           | D-24/23                             | %     | ≤0.5                    | 0.10                    |
| CTE Z-axis                 | Before Tg | TMA                                 | PPM/℃ | ≤60                     | 55                      |
|                            | After Tg  | TMA                                 | PPM/℃ | ≤300                    | 280                     |
|                            | 50~260℃   | TMA                                 | %     | ≤3.5                    | 3.3                     |
| Td                         |           | 10℃/min, N <sub>2</sub> , 5%Wt Loss | ℃     | ≥325                    | 335                     |
| T288                       |           | TMA                                 | min   | ≥5                      | 10                      |
| T260                       |           | TMA                                 | min   | ≥30                     | 60                      |
| CTI                        |           | IEC60112 Method                     | V     | 175~250(grade3)         | 200                     |

Remarks: All the data listed above can meet IPC-4101/124 requirement.  
Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

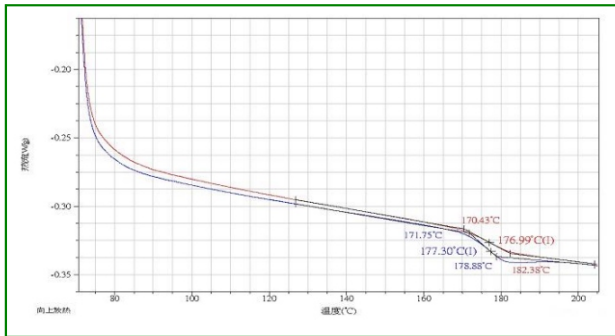
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in ℃ and with the third digit the relative humidity.



# S1170

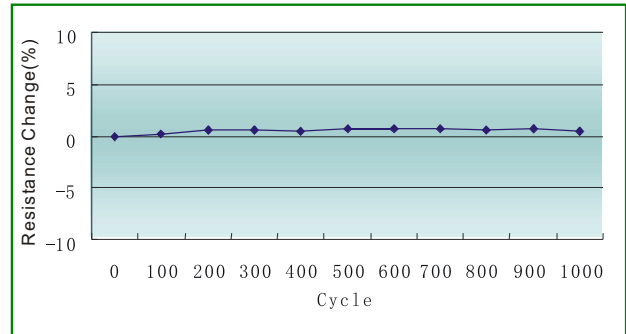
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## High Tg



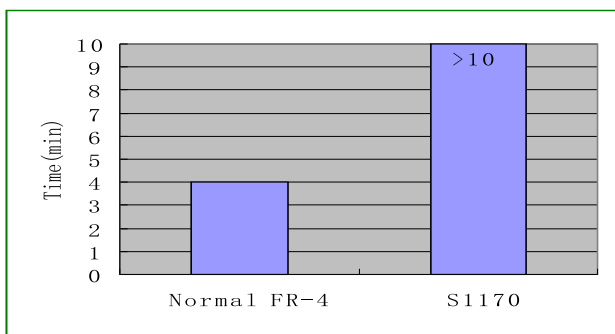
Test Sample: S1170 1.6mm CCL  
Test Method: DSC  
Test Results: 176.99°C/177.30°C

## Excellent Thermal Shock Resistance (Q1000)



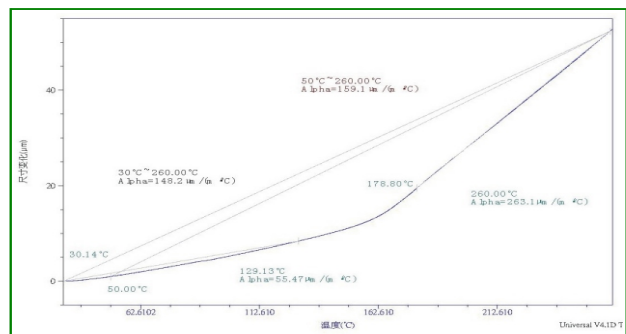
Test Sample: S1170 multi-layer Board  
Test Method: Q1000 (-45°C ~ 130°C)  
Test Results: Pass 1000 cycles

## Excellent Thermal Stress Resistance



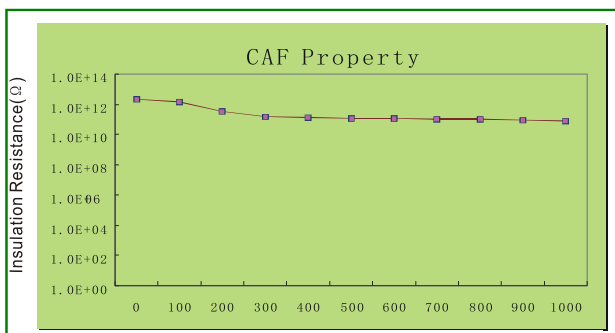
Test Sample: S1170 and normal FR-4 CCL  
Test Method: Solder dip 288°C  
Test Results: S1170 is better than normal FR-4 (time to delamination)

## Low Z-axis CTE



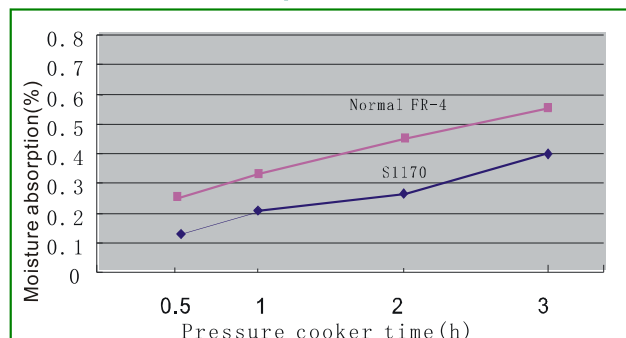
Test Sample: S1170 1.6mm CCL  
Test Method: TMA  
Test Results: 3.3% (50°C ~ 260°C)

## Excelent Anti-CAF Performance



Test Sample: S1170 multi-layer Board  
Test Method: 85°C/85%RH/DC 50V  
Test Results: Pass 1000 hours

## Low Water Absorption



Test Sample: S1170 and normal FR-4 CCL  
Test Method: PCT  
Test Results: S1170 is better than normal FR-4



# S0701 PREPREG

(ANSI:FR-4) Bonding Prepreg For S1170

## 特点

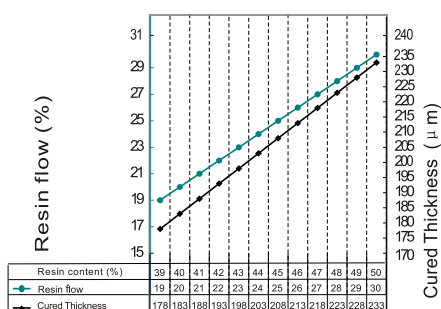
- 高Tg 170℃(DSC)。
- 良好的粘合性能与PCB可加工性能。
- 与S1170芯板配套使用。

## FEATURES

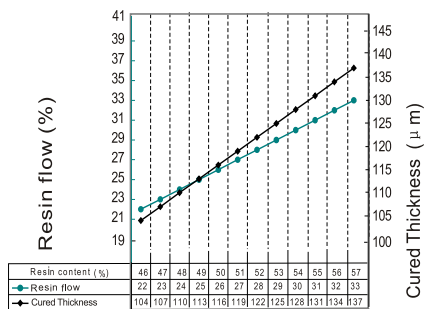
- High Tg 170℃ (DSC).
- Excellent adhesion property and PCB processability.
- Coordinate with S1170 T/C.

## PREPREG PARAMETERS

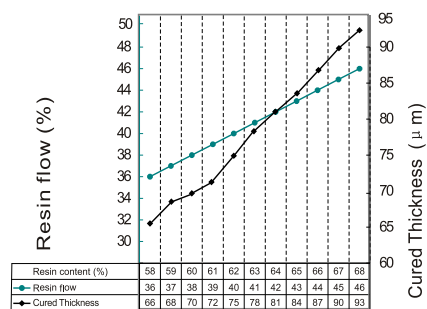
### 7628 TYPE PREPREG



### 2116 TYPE PREPREG



### 1080 TYPR PREPREG



| Designation | Glass fabric type | Performance      | Gel time (sec) | Resin content (%) | Resin flow (%) | Cured Thickness (μm) | Standard Size (roll type) |
|-------------|-------------------|------------------|----------------|-------------------|----------------|----------------------|---------------------------|
| S0701       | 106               | High Performance | 90±20          | 71±3              | 47±5           | 50±10                | 1,260mm×114.3m (125yards) |
|             | 106LD             |                  |                | 71±3              | 47±5           | 50±10                |                           |
|             | 1080              |                  |                | X±3               | X±5            | X±10                 |                           |
|             | 1080LD            |                  |                | 61±3              | 39±5           | 76±10                |                           |
|             | 2112              |                  |                | 57±3              | 30±5           | 92±15                |                           |
|             | 2113              |                  |                | 56±3              | 26±5           | 102±15               |                           |
|             | 2313              |                  |                | 55±3              | 26±5           | 102±15               |                           |
|             | 3313              |                  |                | 55±3              | 26±5           | 102±15               |                           |
|             | 2116              |                  |                | X±3               | X±5            | X±15                 |                           |
|             | 2165              |                  |                | 52±3              | 26±5           | 143±15               |                           |
|             | 1500              |                  |                | 45±3              | 22±5           | 163±15               |                           |
|             | 7628              |                  |                | X±3               | X±5            | X±20                 |                           |

Type, Resin content and Size Could be Available Upon Request

## PREPREG TEST METHOD

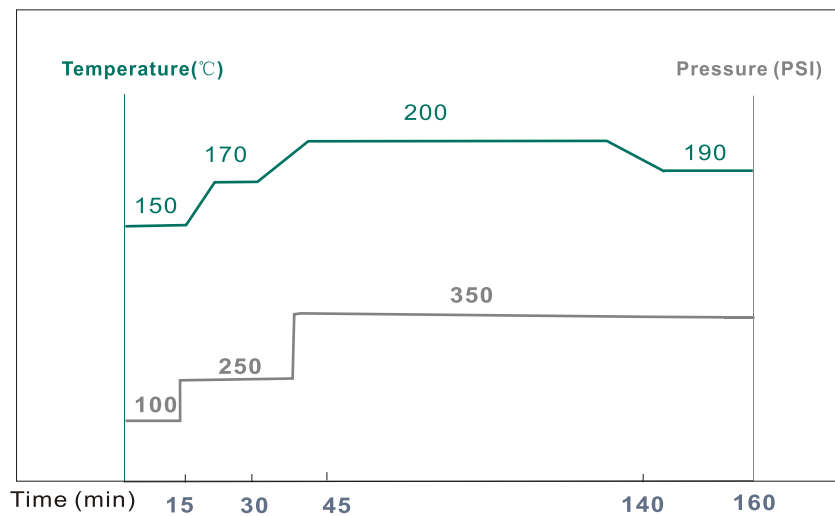
- Resin content, Resin Flow, Gel Time: IPC-TM-650



# S0701 PREPREG

(ANSI:FR-4) Bonding Prepreg For S1170

## HOT PRESSING CYCLE



Heat-up rate: 1.5~2.5°C/min (80~140°C)  
Curing time: >60min (185~195°C)

## STORAGE CONDITION

- For short term storage, keep in 20°C, 50% RH within 3 months .
- For long term storage, keep in 5°C within 6 months. Normalize in room temperature for at least 4h before using.
- Beware of moisture, always keep wrapped in damp-proof material. Were kept in normal condition, prepreg might absorb moisture and its bonding strength would be weakened.
- Avoid UV-rays and strong light.