



品质承认书 Quality Specification

| | | |
|--|-----------------|------------------|
| 客户 Customer: 供应商: 广东东溢新材料科技有限公司 Supplier: GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&TECHNOLOGY CO., LTD. | | |
| 产品类型 Product type: 高性能丙烯酸纯胶膜 High Performance Acrylic Adhesive Bonding Sheet | | |
| 材料品名 Material Name: PH 高性能纯胶 PH High Performance Bonding Sheet | | |
| 编号 NO:B065 版本 Ver: A5 制作日期 Date of production:2025/12/3 | | |
| 客户确认 Customer: | | |
| 采购 Purchase: | 品质 Quality: | 工程 Engineering: |
| 职务 Position: | 职务 Position: | 职务 Position: |
| 备注 Note: (盖章 Seal) | | |
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| 职务 Position: 总经理 | 职务 Position: 经理 | 职务 Position: 经理 |
| 备注 Note: (盖章 Seal) | | |

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产品名称 Product Name

| 序号 No | 东溢型号 Product Model | 胶厚(um) AD Thickness | 涂布基材类型 Coated Film Type | 包装规格 Packing Spec. |
|----------|-----------------------|------------------------|----------------------------|-----------------------|
| 1 | PH12.5-250K(F1) | 12.5 | Release film | 250mm*100m |
| 2 | PH20-250K(F1) | 20 | Release film | 250mm*100m |
| 3 | PH25-250K(F1) | 25 | Release film | 250mm*100m |
| 4 | PH30-250K(F1) | 30 | Release film | 250mm*100m |
| 5 | PH35-250K(F1) | 35 | Release film | 250mm*100m |
| 6 | PH40-250K(F1) | 40 | Release film | 250mm*100m |
| 7 | PH50-250K(F1) | 50 | Release film | 250mm*100m |

● 产品特性 Product Features

- 优异的剥离强度 Excellent peel strength
- 贴金属优异的耐高温高湿性能 Excellent high temperature and high humidity resistance for metal lamination
- 较低的流动性和优良的加工性 Low fluidity and excellent process-ability
- 优异的耐化学性和耐热性 Excellent chemical and thermal resistance
- 符合 ROHS 环保指令 ROHS compliant

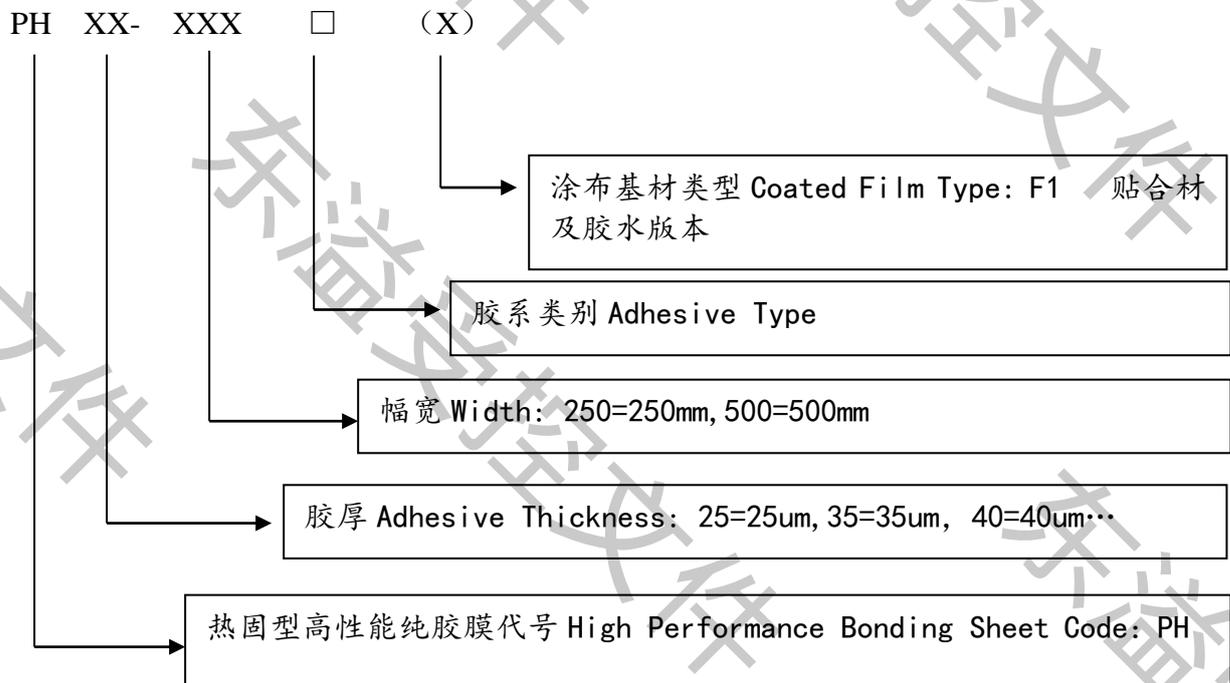
● 产品结构 Product Structure



● 编码原则 Product coding principle

品名示意图如下 The Product Coding Principle is elaborated as following:

注：□：表示英文字母 English alphabet；x：阿拉伯数字 Arabic numeral..



●物性指标 General Properties

| 序号 Item | 性能项目 Test Item | 单位 Unit | 测试条件 Test Condition | 标准 Standard | 测试方法 Test Method |
|------------|------------------------------|------------|---------------------------------------|---|------------------------|
| 1 | 厚度 Thickness | um | <25um | ±2 | 东溢规范 Dongyi Method |
| | | | 25~30um | ±3 | |
| | | | >30 | ±10% | |
| 2 | 幅宽 Width | mm | A | 标准 Standard +2/-0 | 东溢规范 Dongyi Method |
| 3 | 剥离强度 Peel Strength | kfg/cm | A | ≧1.4 | IPC-TM-650-2.4 .9 |
| | | | 85°C /85%RH/96h | ≧1.2 | |
| 4 | 耐化学品性 Chemical Resistance | % | HCl&NaOH 2mol/L | ≧20 | IPC-TM-650-2.3 .2 |
| 5 | 焊锡耐热性 Solder Resistance | --- | 288°C/10S/3次 | 无分层、起泡 No delamination sparkling | IPC-TM-650-2.4 .13 |
| 6 | 溢胶量 Resin Flow | mm | 单面有胶电解铜的 PI+ 单面有胶电解铜的 PI (3L FCCL PI) | 12.5um:0.06-0.1; 25um:0.08-0.15; 30~50um:0.1-0.25 | IPC-TM-6502.3. 17.1 |

注 Note :

1.A 代表常态“A” Means normal.

2.在与胶膜贴合前，先用丙酮擦干净贴合面,并静置待溶剂挥发干净。

Cleaning surface with acetone wipe is recommended before lamination. Please pay attention that the solvent evaporate after cleaning.

3.严禁使用有硅保护膜贴合纯胶，如果贴合有硅保护膜会导致剥离强度严重衰减。

It is strictly prohibited to use a silicon-based protective film to attach the bonding sheet, and if a silicon-based protective film is bonded, the peel strength will be severely attenuated.

4.上述剥离强度标准不包括贴合镜面金属材料。

The above peeling strength standards do not apply to mirror-surface metal materials.

外观管控 Appearance requirement

| 异常类型 Exception classes | 异常大小 Abnormal size | 允许个数 Allowed value (250*400mm) |
|---------------------------|--------------------|-----------------------------------|
| 杂质 Impurity | 0.1~0.5mm | ≧8 个 dots |
| 垫伤 Pad injury | 0.5~1mm | ≧1 个 dots |

| | |
|-----------|-----------------------------------|
| 气泡 Bubble | $\geq 1\text{mm}$ 不允许 Not allowed |
|-----------|-----------------------------------|

注 Note: 产品边缘 3mm 以内异常, 不作管控要求。Any defect within 3 mm of the outside edges of the sheet or roll is disregarded.

● 储存 Storage

| | |
|---------|---|
| 储存条件 | 温度 $<30^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ 、储存 3 个月 或 温度 $\leq 10^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ 、储存 6 个月 |
| 背胶后储存条件 | 温度 $<30^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ 、储存 1 个月 |

1. 温度 $<30^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ (或温度 $\leq 10^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ 、储存 6 个月)、真空包装, 无腐蚀性气体的室内, 按照 PH 纯胶的制造日期后保存 3 个月。

If stored at below room temperature: Temperature $<30^{\circ}\text{C}$, 湿度 $\leq 70\% \text{RH}$, airproof vacuumed packaging, no corrosive gas chamber for 3 months since the date of manufacture.

2、分切后, 储存条件同上第 1, 保质期为: 常温 3 个月, 加干燥剂密封储存。the storage conditions should be the same as described in above point 1. The product shelf-life of PH bonding sheet under normal temperature is 3 months, and the product is sealed with desiccant for storage

3、产品背胶转移后: After lamination of the bonding sheet on the product 温度 $<30^{\circ}\text{C}$ 、湿度 $\leq 70\% \text{RH}$ 储存周期为一个月: the storage period is 1 month at: temperature $<30^{\circ}\text{C}$, humidity $\leq 70\% \text{RH}$.

(储存周期是指产品从开箱背胶到压合固化前整个过程。Storage cycle refers to the period of time from the lamination of the bonding sheet on the product prior to the pre-curing process of the product.)

● 包装 Packing

1. 每一卷成品用纸管卷取。每批出货的每个规格提供一份品质检验报告 Each roll of finished product is coiled in paper tube. A quality inspection report is provided for each specification of each batch of product.

2. 每一卷成品用纸箱包装, 避免在运输上碰撞。产品采用防潮、干燥、密封包装, 成卷装入纸箱。Each roll of finished products is packed in cartons to avoid collision in transportation. Products are packed in moisture-proof, dry and sealed packages and packed into cartons in rolls.

3. 包箱标签 Package Label

无卤标签 Halogen free label: 环保标签 Green Label: 合格标签 Inspection Tag:



产品标签 Product Label:

| | |
|--|----------------|
|  广东东溢新材料科技有限公司 GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&TECHNOLOGY CO., LTD. | |
| 纯胶膜 | |
| 订单号 Order: | |
| 型号 Type: | |
| 宽度 Width: | mm |
| 长度 Length: | m |
| 面积 Area: | m ² |
| 接头 Splice: | m |
| 批号 Lot. NO: | |
| 生产日期 Production date: | |
| 保质期至 Shelf life: | |
| 储存环境 Storage: | |



月份标签 Month label:

| | | | | | | | | | | | |
|------------|------------|------------|------------|------------|-------------|-------------|------------|-------------|------------|-------------|-------------|
| 一月 Jan. | 二月 Feb. | 三月 Mar. | 四月 Apr. | 五月 May. | 六月 June. | 七月 July. | 八月 Aug. | 九月 Sept. | 十月 Oct. | 十一月 Nov. | 十二月 Dec. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

● 装运 Shipment

每批提供一份质量检验报告:Each batch of product will be provided with a quality inspection report as following:

|  广东东溢新材料科技有限公司 GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&TECHNOLOGY CO., LTD. | | | |
|---|-----------------------------------|--|-----------------------|
| 纯胶膜出厂检验报告 | | | 编号: JL-Q-02-004-15 |
| 日期 (Date): | | 客户: (customer): | |
| 品名(Material spec) | | | |
| 批号 (Lot No.) | | | |
| 保存期限(Shelf life) | | | |
| 检验项目 (Test item) | 检验方法 (Test method) | 品质标准 (Quality Spec) | 测试结果 (Test Result) |
| Adhesive厚度 (Adhesive thickness) | 东溢规范 (Unit:μm) | 25um±5 | 25.3 |
| 幅宽 (Width) | 东溢规范 (Unit:mm) | 250 +2/-0 | 250 |
| 剥离强度 (Peel Strength) | IPC-TM-650 2.4.9 (Unit:kgf/cm) | ≥1 | 2.2 |
| 转移性 (Transitivity) | 东溢规范 | 在120℃-150℃下,通过塑封机转移,胶膜应能转移于覆铜箔聚酰亚胺薄膜面上,揭掉载体纸(膜)而不破坏胶膜。 | OK |
| 焊锡耐热性 (Solder Float Resistance) 288℃/10sec | IPC-TM-650 2.4.13 | 无分层起泡 (No Blistering or Delamination) | OK |
| 产品判定结果 | | | OK |

备注:

1. 以上测试数据仅供参考。
2. PH胶膜适用于FPC贴合钢片用胶。
3. 上述产品不含[RoHS]所规定的禁用物质。
4. 以上焊锡耐热性测试所用基材先经120℃/5~10min烘烤处理后,再与胶膜贴合进行测试。
5. 如产品被放置在低温下储存环境(尤为冬季),建议客户在使用前将产品静置回暖直至产品温度回升至室温(20--30℃)后方才使用、以确保最佳产品使用特性,同时也应避免放置在阳光直接照射及高温环境下。
6. 在背胶前,如接触界面做表面清洁,须保证接触界面干燥及不残留溶剂(如酸碱、油污等)。
7. 压合后的产品建议使用千层架烘烤,如无千层架建议叠层张数不超过20PNL,以避免叠层太多而影响产品固化效果。

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审核(APPROVED BY):

检验员(CHECKED BY):

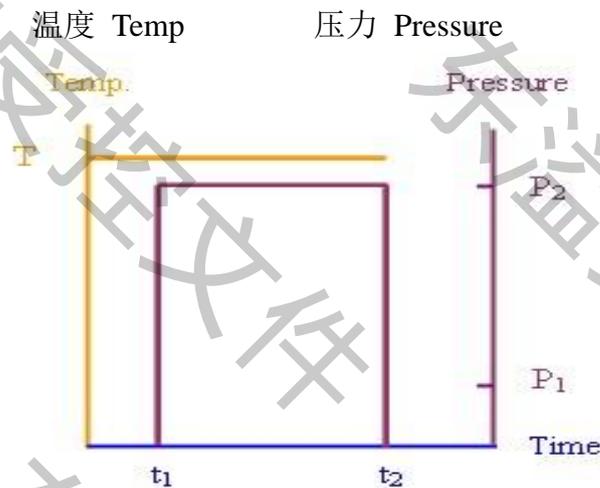
● 建议压合工艺 Recommendations for pressing process

1. 背胶工艺 Adhesive technology:

A、过塑机 Machine: 用 $120 \pm 20^\circ\text{C}$ 过塑, 最佳温度 120°C , 速度 $1.0 \pm 0.5\text{m/min}$, 压力 $8 \pm 2\text{kgf/cm}^2$ 。Laminate with $120\text{-}150^\circ\text{C}$, the suggested optimal temperature of lamination is 120°C . Speed $1.0 \pm 0.5\text{m/min}$ pressure $8 \pm 2\text{kgf/cm}^2$ 。

B、低温压合转移 Low temperature pressure transfer: 温度 $120 \pm 20^\circ\text{C}$, 压力 $10 \pm 5\text{kgf/cm}^2$, 预压 5S, 成型压 $15 \pm 5\text{S}$ 。Temperature to $120 \pm 20^\circ\text{C}$, pressure to $10 \pm 5\text{kgf/cm}^2$, preloading 5 s, molding pressure: $15 \pm 5\text{s}$ 。

2. 压合工艺 Pressing process:



A. 快压工艺 The quick pressing:

第一段: 温度 Temp T: $180 \pm 5^\circ\text{C}$

Stage I 压力 Pressure P1: 0 Kgf/cm^2

时间 Time 0~t1: 10 Sec

第二段: 温度 Temp T: $180^\circ\text{C} \pm 5^\circ\text{C}$

Stage II 压力 Pressure P2: $90 \pm 10\text{ Kgf/cm}^2$

时间 Time t1~t2: $160 \pm 40\text{Sec}$

B. 真空压合工艺 Vacuum pressing process:

第一段: 温度 Temp T: $180 \pm 5^\circ\text{C}$

Stage I 压力 Pressure P1: 0 Kgf/cm^2

时间 Time 0~t1: 10 Sec

第二段: 温度 Temp T: $180^\circ\text{C} \pm 5^\circ\text{C}$

Stage II 压力 Pressure P2: $18 \pm 2\text{ Kgf/cm}^2$

时间 Time t1~t2: $150 \pm 50\text{Sec}$

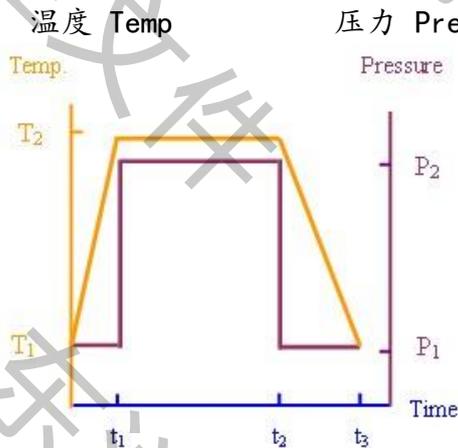
固化 Curing Process:

升温: 温度 Temp T1 room Temp~ $165 \pm 5^\circ\text{C}$

恒温: 温度 Temp T2 $160 \sim 170^\circ\text{C}$;

时间 Time T1~T2: $60 \sim 90\text{min}$ 。

C. 传统压合方式 Traditional Lamination



传压工艺 Traditional pressing:

- 第一段: 温度 Temp T1 40°C ~ 175±5°C
Stage I 压力 Pressure p1 15±5kgf/cm²
时间 Time t1 40±10min
- 第二段: 温度 Temp T2 175±5°C
Stage II 压力 Pressure p2 25~40kgf/cm²
时间 Time t1~t2 60±20 min
- 第三段: 温度 Temp T2~T1
Stage III 压力 Pressure p1 15±5kgf/cm²
时间 Time t2~t3 45±15 min

注 Note: 以上为建议压合参数, 鉴于各厂家机台及生产工艺都有差异, 故如上作业参数仅供参考。 The above pressing parameters are for reference only. Due to difference in pressing facilities and production process, the most appropriate pressing parameters should be determined by practical examinations.

● 使用注意事项 Matters needing attention

1. 纯胶膜开料后建议 30 天内完成压合固化。未固化纯胶在生产加工的整个材料的存储和转序过程中, 需要用 PET 密封袋防护好材料, 同时温度不应超过 30°C, 湿度 < 70% RH。

It is strongly recommended that the compression curing be completed within 30 days after the lamination of the bonding sheet. In the process of storage and circulation of the product during production and processing processes, we need to use PET seal bags to protect the product under 30°C temperature and 70% RH humidity.

2. 在背胶与贴合 FPC 前, 接触界面需做表面清洁, 须保证接触界面干燥及不残留溶剂 (如酸碱、油污等)。

Before lamination, please ensure the cleanliness of the lamination surface, especially the lamination surface must be dry and clean and should not contain solvent residuals (e.g. acidic substances, alkaline substances, grease, etc.).

3. 压合后的产品建议使用千层架烘烤, 如无千层架建议叠层张数不超过 20PNL, 以避免叠层太多而影响产品固化效果。

Pressed products are recommended to be baked on a multi-layer rack. If there is no multi-layer rack, in order to ensure curing effect, it is recommended that the number of laminated sheets should not exceed 20PNL.

4. 贴合钢片或铝片等金属材质且尺寸在 20mm*40mm 以上的, 在过 SMT 的时候因钢片散热难度增加, 容易出现鼓泡现象, 因此建议: a. 增加适配尺寸和适配数量的排气孔后评估; b. 选择耐热特性更匹配的环氧纯胶膜。For metal materials such as steel or aluminum sheets that are in close contact and have a size of more than

20mm*40mm, it is to have bulging phenomenon during SMT due to the increased difficulty in heat dissipation of the steel sheet, so it is recommended: a. Evaluate after increasing the exhaust hole with size and quantity; b. Choose epoxy pure film with more matched heat resistance.

4. SMT 前烘烤处理, 温度 120℃, 时间 2-4 小时。

SMT pre baking treatment, temperature 120℃, time 2-4 H.

5. 此规格书中表述的所有测试数据以及建议之工艺条件和参数仅供参考, 产品使用方需要按照自身实际生产设备及产品要求等因素自行确认最优生产工艺及作业参数。特此声明!

Hereby declared that all test data and recommended process conditions and operating parameters presented in this technical datasheet are for informational purposes only. Product users need to confirm the optimal production process and operating parameters according to their actual production equipment and product requirements.

● 物性测试方法 Properties Test Method

剥离强度检验方法 Peel Test Method

- 1、 范围 The range:

本检验方法适用本公司纯胶产品剥离强度之量测。This test method is suitable for peeling strength measurement of the bonding sheet.

- 2、 检测仪器 Testing instruments:

剥离强度测试仪 Peel strength testing instruments

- 3、 样品制作 The sample:

- a) 分别裁取 1 块 0.5mil/0.5oz 有胶单面基材, 大小为 10cm×10cm, 用酒精清洁干净, 待用。

Slice a piece of 0.5mil/0.5oz one-sided FCCL and 0.5mil Coverlay, respectively, in the size of 10cm×10cm, Using alcohol to clean, ready for use.

- b) 裁取一块大小 10cm×10cm 的纯胶膜, 先与单面基材 PI 面进行贴合, 放在 120℃ 过塑机上过一遍, 冷却后将过塑后的样品裁切出 3 条 0.5cm 宽, 长 10cm 以上的样片, 待用。

Cut the bonding sheet in the size of 10cm × 10cm, first laminate with the FCCL-PI, then placed on the laminator at the temperature of 120 °C, after cooling the sample will be sliced into three pieces in the size with width of 0.5cm and length of 10cm, ready for use.

- c) 取一片长 8cm, 宽 0.5cm, 厚 0.2mm 钢片, 用酒精把表面清洁干净, 待用。

Take a 8cm,x 0.5cm, thickness 0.2mm SUS, and use alcohol to clean the surface, then set aside.

- c) 将钢片贴在样片的纯胶膜面, 并快压: 温度 180℃、压力 30kgf/cm²、预压时间 10s、成型时间 120s; 熟化: 160℃ × 60min ; Bond an adhesive film to SUS and quick press: temperature 180℃, pressure 30kgf/cm², pre pressing time 10s, molding time 120s; curing: 160℃ * 60min.

4、样品测试 The sample test:

- a) 把样品钢片面用双面胶固定在测试仪的滚轮上, 用夹具夹住 FCCL 一端, 与滚轮垂直, 然后匀速上升, 每隔 1 秒, 按打印机一次, 共打印出 15~30 个数据即可, 取打印数据的平均值作为此条样品的剥离强度值。Fix the sample SUS surface on the roller of the peel strength testing instrument with double-sided tape. Clamp one end of FCCL with fixture, perpendicular to the roller, and then rise uniformly. For each second, press the printer once and print out 15-30 data, take the average value of the printed data as the peeling strength value of this sample.
- b) 注意事项: 剥离机上升速度: 50mm/min, 剥离距离: 10~20mm; 拉铜箔、样品与滚轮垂直。Attention: machine rise: 50 mm/min, stripping distance: 10 ~ 20 mm; Pull copper foil, and is pulled perpendicular to the roller.

5、公式计算 Formula to calculate:

$$\text{剥离强度 Peel strength} = \frac{\text{拉力 Tensile force (kgf)}}{\text{宽度 The width (cm)}}$$

注: 以上规范参考 IPC-TM-650, Method 2.4.9. Note: The above specification reference IPC - TM - 650, Method 2.4.9.

焊锡耐热性检验方法 Solder Resistance Test Method

1、范围 The range:

本检验方法适用于东溢公司纯胶产品焊锡耐热性之量测。This test method is suitable for soldering resistance measurement of the bonding sheet.

2、检测设备 Testing instruments:

锡炉。Wave solder

1. 样品制作 Sample Preparation:

- a) 切取两块半对半单面板, 切取 10cm×10cm 大小, 先用 120℃烘烤 5~10 分钟, 然后待用 (注: 必要时用丁酮轻擦一遍再烘干)。Cut two pieces of single-sided

FCCL, cut into the size of 10cm×10cm, bake at 120°C for 5 to 10 minutes, and then stand by. (Note: Rub it gently with MEK and dry it again if necessary).

- b) 切取一块大小相同的纯胶膜，先与一块覆铜箔 PI 面进行贴合，放在 120°C 过塑机上过一遍，冷却后撕掉涂胶基材，再与另外一块覆铜箔 PI 膜贴合，再放在 120°C 过塑机上过一遍。Cut a piece of bonding sheet of the same size, to laminate with the PI side of a piece of FCCL, press with a laminator at 120°C, peel off the FCCL after cooling, and then laminate with the PI side of another FCCL, and then press with a laminator at 120°C again.
- c) 快压: 温度 180°C、压力 100kgf/cm²、预热 10s、成型 90s; 熟化: 160 °C × 60min;
Quick press: temperature 180°C, pressure 100 kgf/cm², Time: 10s, 90s; Cure: 160 °C x 60 min.

4. 样品测试 The sample test:

将固化好的样品立即裁成 3cm×3cm 大小三块，用镊子夹住浸入恒温焊锡液中，焊锡液温度 288°C，每个样品浸锡 10S，然后拿出观察其表面是否有分层或起泡。以上测试请务必在 5 分钟完成，以防止再次吸湿影响测试结果。Cut the cured sample into three pieces of 3cm *3cm size immediately, clamp the cured sample with tweezers in immersed solder solution at constant temperature, and the solder liquid temperature is at 288°C, dip each cured sample for 10S, then take out the dipped sample to observe the surface for traces of delamination or blistering. The above test must be completed in 5 minutes to prevent further hygroscopicity from affecting the test results.

注: 以上参考 IPC-TM-650, Method 2.4.13。 Note: The above specification reference IPC - TM - 650, Method 2.4.13.

离型力的检测方法 Test Method of Deposition Force

取纯胶原膜样品，尺寸 250*200mm，按照过塑机或低温压合转移的背胶工艺方式，转移到所需背纯胶的物料上，完成并放置至冷却后，用手指扣起纯胶边缘，拉动离型膜，无难撕及带胶不良即可。

Take bonding sheet in the size of 250*200mm, and transfer the adhesive to the material with the laminator at low temperature. After finishing lamination and the material is cooled down, buckle the edge of the bonding sheet with your finger, pull the release film, and to detect whether there is no difficulty in tearing.