

## 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: 高频纯胶膜 LOW DK/DF Bonding Sheet		
材料品名 Material name: PL-L		
编号 No:B062 版本 Ver: A4 制作日期 Date of production:2024/01/16		
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)		
广东东溢新材料科技有限公司 GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&TECHNOLOGY CO., LTD.		
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## 产品名称 Product name

序号 No	东溢型号 DY model	胶厚(μm) AD Thickness	包装规格 Packaging
1	PL12.5-250L(F)	12.5	250mm*200m
2	PL12.5-500L(F)	12.5	500mm*100m
3	PL25-250L(F)	25	250mm*200m
4	PL25-500L(F)	25	500mm*100m
5	PL35-250L(F)	35	250mm*200m
6	PL35-500L(F)	35	500mm*100m

## ●产品特性 Product Features

- 极低的介电常数和损耗因子 Very low DK and DF
- 卓越的电性能和绝缘性 Fine electrical performance and insulation performance
- 良好的尺寸稳定性 Good dimensional stability
- 优异的高温高湿性能 High temperature and high humidity performance
- 无卤无锑，符合ROHS环保指令 Halogen & antimony free, ROHS compliant

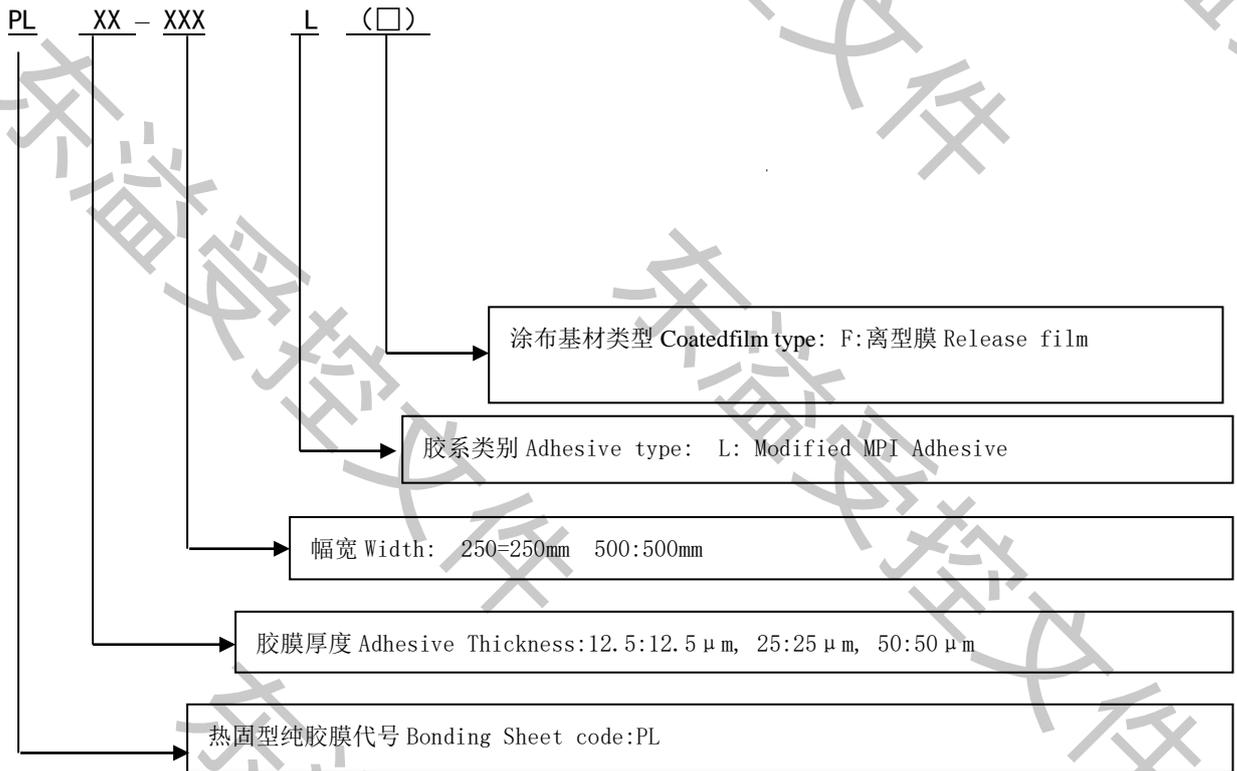
## ●产品结构 Product Structure



### ● 编码原则 Product coding principle

品名示意图如下 The diagram as follows:

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
			25~40um	±3	
			>40	±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	kgf/cm	Method - B	≧ 1.0	IPC-TM-650-2.4.9
4	耐化学品性 Chemical Resistance	%	HCl&NaOH 2mol/L	≧ 20	IPC-TM-650-2.3.2

此规格书为东溢公司机密文件且涉及专利保护事宜，未经东溢公司书面签署确认同意严禁转载转发，此规格书中所有条款内容最终解释权归东溢公司所有，特此声明！ Hereby declared that this technical datasheet is a confidential document of Dongyi and involves patent protection matters, reproduction and forwarding without the written permission of Dongyi Company is strictly prohibited, the final interpretation of all the terms and conditions in this technical datasheet belongs to Dongyi.

5	焊锡耐热性 Solder Resistance	---	288°C/10S	无分层、起泡 No delamination, sparkling	IPC-TM-650-2.4.13
6	溢胶量 Resin Flow	mm	180°C/10s /100kgf/90s	0.05~0.30	IPC-TM-650-2.3.17.1
7	表面电阻 Surface Resistance	Ω	C-96/23/65	≧10 <sup>11</sup>	IPC-TM-650-2.5.17
8	体积电阻 Volume Resistance	Ω.cm	C-96/23/65	≧10 <sup>12</sup>	IPC-TM-650-2.5.17
9	介电常数 Dielectric Constant	---	C-24/23/50 (10GHz)	≧3.0	SPDR (25°C, 55%RH)
10	消耗因素 Dissipation Factor	---	C-24/23/50 (10GHz)	≧0.005	

注 Note : A 代表常态 “A” Means normal.

### 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	≧1mm	不允许 Not allowed
接头 Joint		≧3 个

注 Note: 产品边缘 3mm 以内异常, 不作管控要求 From the product within 3 mm of the edge of exception, don't do control requirements.

### ● 储存 Storage

温度 <10°C、湿度 40-70% RH、真空包装、无腐蚀性气体的室内, 制造日期后保存 3 个月。Temperature <10°C, humidity 40-70% RH, airproof vacuumed packaging, no corrosive gas chamber for 3 months.

### ● 包装 Packing

- 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 volume of finished paper tube winding.
- 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 volume of finished carton packaging, in the transport collision avoidance. Products using moistureproof, dry, sealed packaging, rolls into cartons.

3. 包箱标签 Package box label

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



唛头 Shipping mark:

 广东东溢新材料科技有限公司 <small>GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&amp;TECHNOLOGY CO., LTD.</small>	
<b>纯胶膜</b>	
订单号 Order:	
型号 Type:	
宽度 Width:	mm
长度 Length:	m
面积 Area:	m <sup>2</sup>
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 Qct.	十一月 Nov.	十二月 Dec.
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>

● 装运 Shipment

每批提供一份质量检验报告，如下表（报告模版仅供参考）: Each shipment of each specification provides a quality inspection report. The following table

(Report format for reference only):

 <b>广东东溢新材料科技有限公司</b> <small>GUANGDONG DONGYI HIGH-TECH MATERIAL SCIENCE&amp;TECHNOLOGY CO., LTD.</small>			
<b>纯胶膜出厂检验报告</b>			
日期 (Date):		客户: (customer):	
品名 (Material spec)		PL25-250L(F)	
批号 (Lot No.)			
保存期限 (Shelf life)		<small>&lt;10℃, &lt;70%RH 保存3个月</small> <small>( Below 10℃, 70%RH for 3 months)</small>	
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)	胶层厚度<25um, ±2 胶层厚度≥25um, ±3	
幅宽 (Width)	东溢规范 (Unit:mm)	250 +2/-0	
溢胶量 (Resin flow)	东溢规范 (Unit:mm)	≤0.2	
剥离强度 (Peel Strength)	IPC-TM-650 2.4.9 (Unit:kgf/cm)	≥1.0	
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。	
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)	
产品判定结果			
备注: 1. 以上测试数据仅供参考。 2. E胶膜适用于FPC线路多层板用胶。 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。 地址: 广东省中山市南区昌盛路22号 电话: 0760-23338784 传真: 0760-23336558 邮编: 528455			
审核 (APPROVED BY):		检验员 (CHECKED BY):	

## ● 建议压合工艺 Recommendations for pressing process

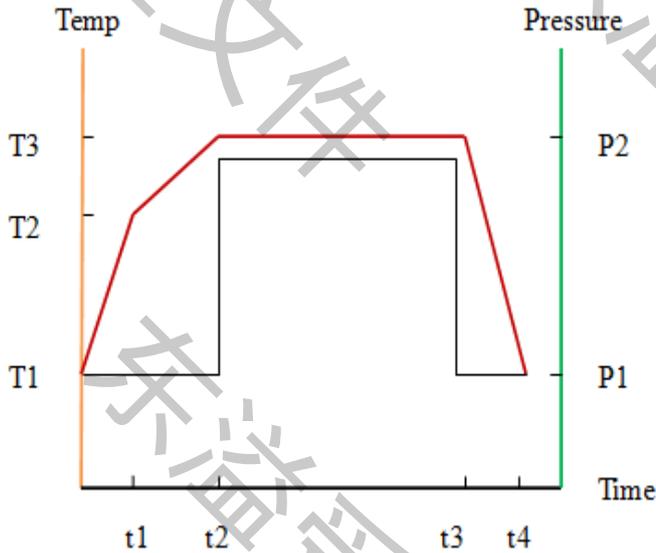
### 1. 背胶工艺 Adhesive technology:

过塑机 Machine: 用 140-160℃ 过塑, 最佳温度 140℃。Plastic with 140-160 °C, the optimal temperature of 140 °C.

干膜机 Dry film machine: 上下温度: 120±10℃、压力: 5±1MPa、速度: 5-7 格。Upper and lower temperature: 120±10℃, the pressure: 5±1MPa, speed: 5-7 lattice.

### 2. 传统压合方式 Traditional Lamination

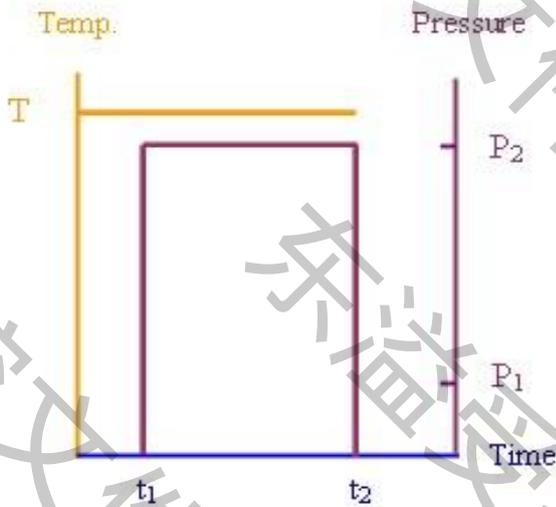
温度 Temp 压力 Pressure



### 传压工艺 Traditional pressing:

- 第一段: 温度 Temp T1~T2 50°C→120°C  
压力 Pressure P1 15±5kgf/cm<sup>2</sup>  
时间 Time t1 15±5min
- 第二段: 温度 Temp T2~T3 120→165±5°C  
压力 Pressure P2 15±5kgf/cm<sup>2</sup>  
时间 Time t2 25±5 min
- 第三段: 温度 Temp T3 165±5°C  
压力 Pressure P2 35±5kgf/cm<sup>2</sup>  
时间 Time t2~t3 75±15 min
- 第四段: 温度 Temp T2~T1 165±5°C~50°C  
压力 Pressure P1 15±5kgf/cm<sup>2</sup>  
时间 Time t3~t4 45±15 min

### 3. 快速压合方式 Fast Lamination 温度 Temp 压力 Pressure



### 快压工艺 The quick pressing:

- 第一段: 温度 Temp: 180±5°C  
Stage I 压力 Pressure: 0Kgf/cm<sup>2</sup>  
时间 Time: 5~20Sec
- 第二段: 温度 Temp: 180±5°C  
Stage II 压力 Pressure: 110±10Kgf/cm<sup>2</sup>  
时间 Time: 135±15Sec
- 固化 Curing Process:  
温度 Temp: 165±5°C;  
时间 Time: 90±30min.

注 Note: 以上建议压合参数, 鉴于各厂家机台及生产工艺差异, 故仅供参考。建议尽量使用传统压合工艺。Customers can according to their own technology, equipment conditions and performance requirements, through the test to determine the appropriate operating conditions. It is recommended that the traditional pressing process be used as far as possible.

### ● 使用注意事项 Matters needing attention

1. 如产品被放置在低于 10 度以下储存环境, 建议客户在使用前将产品静置 4 小时以上回暖直至产品温度回升至室温温度 (20--30°C) 后方才使用、以确保最佳产品

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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 if product was placed in under Temperature 10°C for storage, the product should be placed in the room temperature 20~30°C more than 4 hours before using, in order to make the product temperature up to 20~30°C, to ensure the best product features. At the same time should also avoid placing it in direct sunlight and high temperature environment.

2. 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）。Before lamination, such as contact interface makes the surface cleaning, must also ensure that the contact interface and not dry residual solvents (such as acid and alkali, oil 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。Pressing products recommend the use of multi-layer frame, such as no proposal for multi-layer frame lamination number no more than 20 PNL, to avoid the laminated too much and influence product curing effect.

4. 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 for bonding sheet measurement of peel strength.

#### 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) 切取两块 DSIF0120 单面板，切取 10cm×10cm 大小，先用 120°C 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 DSIF0120, cut the size of 10cm×10cm, first with 120°C bake for 5 to 10 minutes, and then stand (Note: when necessary for butanone graze again and drying).

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℃ 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℃ 过塑机上过一遍。Cut a piece of bonding sheet of the same size, to fit with a piece of copper clad PI, placed in 120℃ on the machine again, after cooling off coating substrate, and then another piece of copper clad PI film, and then placed in 120℃ on the machine again.

c) 快压: 温度 180℃、压力 100kgf/cm<sup>2</sup>、预热 10s、成型 90s; 熟化: 160℃ × 60min; Quick pressure: temperature 180℃, pressure 100 kgf/cm<sup>2</sup>, Time 10 s, 90 s; Cure: 160℃ x 60 min.

#### 4. 样品测试 The sample test:

a) 取熟化过后之样片，裁切 1cm 宽度，烧开使得 FCCL 与纯胶分开然后用手撕开约 3cm。Take samples after curing, cutting 1 cm width to boil make FCCL is separated from bonding sheet.

b) 把样品 FCCL 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。The samples FCCL surface with double-sided adhesive fixed on the roller tester, fixture for clipping FCCL at one end, and vertical roller, and then rising at a constant speed, every 1 second, print 1 data, print out together 15 ~ 30 data, take the print data as the average of the peel strength value of this sample.

c) 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。Note: machine rise: 50 mm/min, stripping distance: 10 ~ 20 mm; Pull copper foil, samples and vertical 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。The test method for bonding sheet measurement of solder resistance.

#### 2. 检测设备 Testing instruments:

锡炉。Wave solder

3. 样品制作 The sample:

- a) 切取两块 DSIF0120 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 DSIF0120, cut the size of 10cm×10cm, first with 120℃ bake for 5 to 10 minutes, and then stand (Note: when necessary for butanone graze again and drying).
- 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℃ 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℃ 过塑机上过一遍。Cut a piece of bonding sheet of the same size, to fit with a piece of copper clad PI, placed in 120℃ on the machine again, after cooling off coating substrate, and then another piece of copper clad PI film, and then placed in 120℃ on the machine again.
- c) 快压: 温度 180℃、压力 100kgf/cm<sup>2</sup>、预热 10s、成型 90s; 熟化: 160℃ × 60min; Quick pressure: temperature 180℃, pressure 100 kgf/cm<sup>2</sup>, Time 10 s, 90 s; Cure: 160℃ 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℃，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。The cured samples were immediately cut into three of 3cm×3cm, with tweezers in constant temperature liquid solder, solder liquid temperature is 288℃, each sample dipping 10S, then take out to observe the surface whether delamination or blistering. Please complete the above test must be in 5 minutes, again to prevent moisture absorption effect 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.