

# 公司简介

## Company Profile

亚太工业集团有限公司，国家重点高新技术企业，中国“电工三膜”（**电工薄膜、金属化薄膜、薄膜电容器**）的研究、开发和生产基地，连续多年位列中国电子元件百强企业。

Asia Pacific Industry Group Co., Limited is a national key hi-tech enterprise, and the base of researching, developing and producing of 3 Film (BOPET & BOPP film for capacitors, metalized film and **film capacitors**) in China. Asia Pacific Industry Group Co., Limited has been ranked China's Top 100 Electronics Enterprises successively for many years.

公司还是国家火炬计划——合肥电子材料产业化基地内重点骨干企业，全国质量管理先进企业，全国重合同守信用先进企业。公司 2000 年 6 月在上海证券交易所挂牌上市，成为全国同类产品企业中首家上市公司。

As a part of National Torch Plan, it is one of the backbone enterprises in Heifei Electronics Material Industrialized Base. And, it awarded of State Quality Management Advanced Enterprise and National Advanced Enterprise Abiding by the Contract and Keeping Promise. Asia Pacific Industry Group Co., Limited was listed on the Shanghai Stock Exchange in June, 2000, and became the first listed company in the identical industry of China.

公司重点发展电子材料、新型电子元器件和电力节能装备。现已发展成为两大产品生产链：电容器用薄膜——金属化薄膜——薄膜电容器产品链；石英晶体材料及延伸产品链。公司主导产品年生产能力：电容器用聚丙烯薄膜 12000 吨，金属化薄膜 4500 吨，聚酯薄膜 5000 吨，交流电容器 10 亿微法，直流电容器 9 亿只，各类电力电子电容器 50 余万台（只）石英晶体频率片 3.3 亿片，石英晶体谐振器 1.2 亿只。公司在全国同行业中首批通过了 ISO9001 国际质量体系认证及 ISO14001 环境管理体系认证，电容器产品相继通过了 CQC、UL、CUL、CSA、VDE、TUV、CB 等多项产品认证。

The corporation focused on developing electronics materials, new electronics elements and energy saving units. It has two products chains. One of them is BOPP film & BOPET film for capacitors, metalized film for capacitors and film capacitors while another is artificial crystal, chip of crystal including sapphire and ruby, and crystal oscillators. The annual output of main products is as following: Bopp film 12,000 tons, Bopet film 5000 tons, AC capacitors 1 billion microfarad, DC capacitors

0.9 billion pcs and power electronics capacitors 500,000 units, crystal chip 330 million pcs and crystal oscillator 120 million pcs. It got ISO 9001 (9002) certificate early in 1993 and ISO 14000 in 2004. Its capacitors have certificates of CQC, UL, CUL, CSA, VDE, TUV, CB and etc.

亚太工业集团有限公司镀膜分公司是一家拥有近三十年历史的专业从事各类金属化膜产品研发及生产企业。公司坐落于合肥经济开发区包河工业园内，占地面积 20000 平方米，固定资产 1.3 亿元。拥有六台从德国莱宝、意大利伽利略公司引进的高真空镀膜机及六台韩国引进的分切机。现有员工 92 人，其中各类专业技术人员三十余人。公司金属化膜年生产能力 2500 吨，产品种类全、质量优。在国内同行业属领先水平。公司先进的生产设备、严格的规章制度、现代化的生产条件，努力为客户提供优良的产品和满意的服务。

Metallized Film Company of Asia Pacific Industry Group Co., Limited is a company specializing in R&D and production of all kinds of metallized film with a history of nearly three decades. The company, located in BaoHe Industrial Park, Economic Development Zone of Hefei, covers an area of 20000 square meters with 130 million of fixed assets. The company has 6 high-vacuum coating machines imported from German Lai BO and Italian Galailo, and 6 splitting machines introduced from South Korea. Nowadays, there are 92 workers and staff, including more than 30 professional and technical personnel. With 2500 tons of annual productive capacity of metallized film, wide product range and excellent quality of products, this

company is in the leading position in the domestic industry.

## 主要产品种类

### Major product categories

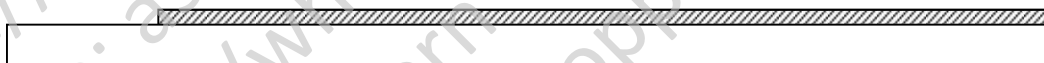
- 铝金属化膜 Al-metallized film
- 铝锌金属化（安全）膜 Al-Zn metallized(safety)film
- 铝锌渐变方阻金属化（安全）膜 Zn-Al metallized (safety)film with Gradually Changed Square Resistance
- 锌加厚铝金属化（高方阻膜 Al-metallized (high square resistance) film with thick Zn

## 金属化膜留边方式

### Margin Mode of Metallized Film

留边方式：单侧留边(S)

Margin mode: Single margin (S)



中留边(M)

Middle margin (M)



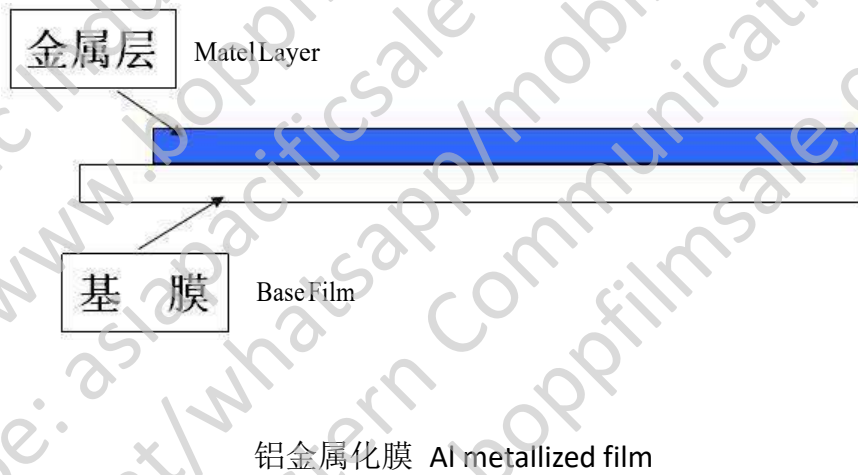
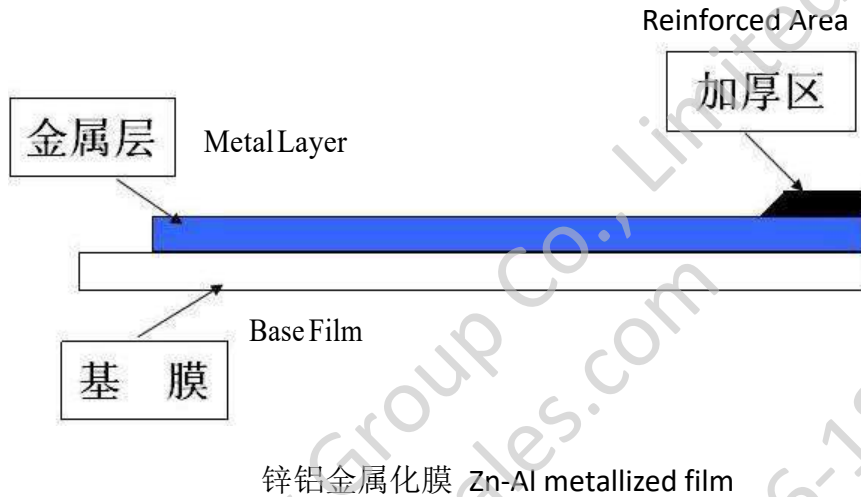
双留边(T)

Double margin (T)



## 金属化膜结构示意图

### Structural diagram of metallized film



### 产品介绍

### Product Introduction

#### 铝金属化膜 Zn-Al metallized film

- 电容器用铝金属化聚丙烯、聚酯薄膜
- Al-Zn metallized PP&PET film for capacitors

- 产品特性：1.较铝锌膜导电性好；2.有较好的自愈性；3.抗大气腐蚀能力强，储存方便，存放时间长；4.可广泛应用于家电、节能电器等产品

Product Features: 1. The electric conductivity is better than that of Al-Zn film; 2. It has better self-healing property; 3. With a considerable resistance to corrosion by air and convenient storage, it can be kept for long time; 4. It is widely used in home appliances, energy-efficient appliances and other products.

- 常用厚度：2.0~9.8 (μm) 偏差：薄膜厚度±10%

The common thickness: 2.0~9.8 (μm) Deviation: film thickness ±10%

- 方块电阻:1~4.5 (Ω/□)

- Square resistance

• 方阻偏差：±0.2Ω/□；±0.3Ω/□；±0.5Ω/□；±1.0Ω/□或：±20%；30%；33%及其他用户特殊要求的方阻

• Square resistance deviation: ±0.2Ω/□；±0.3Ω/□；±0.5Ω/□；±1.0 Ω/□or: ±20%；30%；33%and other user's special requirements.

#### 金属化膜宽度偏差

Width deviation of metallized film

薄膜宽度 (B) wide thickness of film	及允许偏差 (mm) allowable deviation
B≤4.5	±0.1
4.5<B≤12.0	±0.15
12.0<B≤30.0	±0.2
B>30.0	±0.3

留边宽度 (b) 及允许偏差 (mm)	允许偏差 (mm)
b≤0.4	±0.1
0.4<b≤1.0	±0.2

1.0 < b ≤ 2.0	±0.3
b > 2.0	±0.4

我公司具备特殊规格铝膜及各类双面蒸镀铝膜的生产能力，如用户有特殊需求，请与我司联系。

### 铝锌金属化（安全）膜 Al-Zn metallized (safety) film

电容器用铝锌金属化聚丙烯、聚酯（安全）薄膜

• 产品特性：**1.**长时间使用容量衰减不大；**2.**较铝膜相比，镀层厚易于喷金；**3.**喷金时由于氧化锌，电阻率较低。（安全膜同时具备阻燃防爆、抗电强度高、安全性好，电气性能稳定，节省防爆成本等特点）

• 常用厚度：**3~15** (μm) 偏差：薄膜厚度±10%

• 方块电阻：**4~12** (Ω/□)

• 方阻偏差：**±1Ω/□； ±1.5Ω/□； ±2Ω/□； ±2.5Ω/□或： ±20%； 30%； 33%** 及其他用户特殊要求的方阻

金属化膜宽度偏差

薄膜宽度 (B) width of film	及允许偏差 (mm) tolerance
B ≤ 4.5	±0.1
4.5 < B ≤ 12.0	±0.15
12.0 < B ≤ 30.0	±0.2
B > 30.0	±0.3

留边宽度 (b) 及允许偏差 (mm) Margin width (b) and allowable deviation	允许偏差 (mm) allowable deviation
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$b \leq 0.4$	$\pm 0.1$
$0.3 < b \leq 1.0$	$\pm 0.2$
$1.0 < b \leq 2.0$	$\pm 0.3$
$b > 2.0$	$\pm 0.4$

我公司具备特殊规格铝锌膜及各类铝锌安全膜的生产能力，如用户有特殊需求，请与我司联系。

We can produce special specifications of Al-Zn film and all kinds of Al-Zn safety film. Please contact us if you have special requirements.

## 铝锌渐变方阻金属化（安全）薄膜

### Al-Zn metallized (safety) film with gradually changed square resistance

• 产品特性：1.容量衰减小；2.镀层厚易于喷金；3.抗电强度较普通金属化膜可提高10%—15%（安全膜同时具备阻燃防爆、抗电强度高 安全性好，电气性能稳定，节省防爆成本等特点）

• Product features: 1. Capacity fading is small; 2. The coating layer is easy to be sprayed; 3. Dielectric strength can be increased by 10 % -15 % than ordinary metal film (And, safety film is characterized by flame retardant, anti-explosion, high dielectric strength, good safety performance, reliable electrical property, and economization of anti- explosion cost)

• 常用厚度：3.8~15 (μm) 偏差：薄膜厚度±10%

• The common thickness: 3.8~15 (μm) Deviation: film thickness±10%

• 方块电阻:A类、B类、C类、D类、E类、F类、G类、I类或根据客户特殊要求  
Square resistance: Type A, B, C, D, E, F, G, I or according to customers' special needs

• 方阻偏差：±1.5Ω/□

• Square resistance deviation: ±1.5Ω/□

方阻类别表 Category of Square resistance	方阻标称值 Nominal value	方阻偏差 Deviation of square resistance
	加厚区 Reinforced region	活动区 Active region

A	3±1Ω/□	6-9Ω/□
B	3±1Ω/□	6-20Ω/□
C	3±1Ω/□	3-10Ω/□
D	3±1Ω/□	6-15Ω/□
E	3±1Ω/□	3-6; 6-15; 15-20Ω/ □
F (锌加厚铝金属化膜) F(Al metallized film with reinforced Zn)	5-10Ω/□	25±10Ω/□
G	3±1Ω/□	3-20Ω/□
(锌加厚铝金属化膜) (Al metallized film with reinforced Zn)	5-10Ω/□	10-20Ω/□ 40±10Ω/□

### 锌加厚铝金属化（高方阻）膜

#### Al metallized (high square resistance) film with reinforced Zn

● 锌加厚铝金属化（高方阻）膜是我公司研发的电容器用新型原材料，较普通铝锌金属化膜及铝金属化膜相比，有：抗氧化腐蚀能力强、易喷金、自愈性好、导电性好、容量衰减小等优点。可广泛应用于电力电容器、机车电容器等工业市场。该膜在自愈性能、抗电强度方面有着普通金属化膜所不具有的优势，而且生产同种规格性能的电容器使用超高方阻金属化膜可以通过适当减小薄膜厚度的方法来降低电容器的生产成本。使用锌加厚铝金属化（高方阻）膜为基础材料制作的电容器产品，预期使用寿命可达 20~30 年。目前该产品在国内除我公司外，尚无其他企业涉足。

方阻渐变方式请参看上页。用户如有其他特殊规格要求，请联系我们。

Al metallized (high square resistance) film with reinforced Zn is a new raw material developed by our company. By comparing with Al-Zn metallized film and Al



metallized, it has the following advantages: good anti-oxidation corrosion, easily to be sprayed, good self-healing and conductivity and small capacity fading. It can be widely applied to power capacitors, locomotive capacitors and other industrial markets. The film has the advantages in self-healing and dielectric strength that ordinary metallized film does not have. And, high square resistance metallized film is used for manufacturing the same capacitors can reduce production costs by reducing film thickness appropriately. Capacitors using Al metallized (high resistance) film with reinforced Zn as the basic material have the expected life up to 20-30years. Currently, no other enterprises set foot in the product in China, except our company.

Please refer to the previous page for the gradually changed square resistance. If users have other special needs, please contact us.

### 波浪边薄膜 Wave Side Metalized Film

该金属化薄膜的加厚侧采用波浪分切，以增强电容器的喷金层与金属化薄膜的结合力。This metalized film will enhance capacitor's connecting power between metal spraying layer with heavyside of metalized film for capacitor through wavecutting.

大波浪 Big Wave	波 长 Corrugation Pitch	16mm	7.8m m
	波峰-波谷 Peak-Valley	0.8m m	0.8m m
小波浪 Small Wave	波 长 Corrugation Pitch	7.6m m	3.8m m
	波峰-波谷 Peak-Valley	0.3m m	0.3m m

## MPP 基膜性能指标

### Performance index of MPP base film

项目 item		单位 unit	MPP01 型基膜 MPP01 film	MPP02 型基膜 MPP02 film	MPP03 基膜 MPP03 film
拉伸强度 Tensile strength	纵向 MD	N/mm <sup>2</sup>	≥140	≥150	≥160
	横向 TD		≥250	≥280	≥300
断裂伸长率 Elongation at break	纵向 MD	%	≥40		
	横向 TD		≥30		
电气强度（直流 50 点电极法） Electrical strength(DC 50 spots Electrode Method)	平均值 Medium value	V/μm	≥440	≥500	≥500
	最小值 Minimum value		≥370		
介质损耗因素（48Hz~62Hz Or 1kHz） Dielectric loss tangent			≤3.0×10 <sup>-4</sup>		

## MPP 基膜热收缩率 Thermal shrinkage of MPP base film

薄膜类型 Film Type	薄膜厚度 μm Film Thickness	指标值% Index value	
		纵向 MD	横向 TD
MPP01 (normal film)	≤7	≤4.2	≤1.0
	>7	≤4.0	
MPP02( normal film produced by 3 <sup>rd</sup> production line)	≤5	≤3.6	≤0.5
	5~7	≤3.4	
	>7	≤3.2	
MPP03(high temperature 105 degree)	≤5	≤3.0	≤0.3
	6	≤2.8	
	≥7	≤2.5	

## 常用镀膜规格列表

**Common specifications(width\*margin)**

8.5×2	12×2	16×4	20×5	36×3	50×3	75×4	120×5	170×5	300×10
9×0.8	12×3	17×6	22×4	38×2	50×4	75×5	130×5	180×5	300×5
9×1	12×5	18×1	24×3	38×3	50×5	80×4	140×5	190×5	60×3
9×2	13×3	18×2	24×6	38×4	52×3	80×5	140×4	200×4	68×6
9×2.4	14×1	18×3	28×2	40×3	52×4	90×4	147 × 10	200×5	82.5×3
9×3	14×2	18×4	28×3	40×5	55×4	90×5	150×4	200×10	22×6
10×2	14×3	19×6	28×4	42×3	60×4	100×4	150×5	210×5	200×8
10×3	14×4	20×2	30×3	42×4	60×5	100×5	150×8	220×5	18×6
11×5	15×3	20×3	30×5	46×2	70×4	110×5	160×4	240×10	14×6
12×2	16×3	20×4	35×3	46×4	70×5	120×4	160×5	270×10	76.2×3

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