



## Solar POE film introduction

### 1. Company profile

Huizhou Baojun Material Technology Co., Ltd. is a high-tech enterprise with global famous brand "BAOJUN" which was set up in 1999, we specialized in R&D, production, and sale for functional film of EVA film for building glass and PV module.

With headquarter located in Huizhou city, Guangdong province, BAOJUN is the first designated supplier of MWT in the world and leading manufacturer of EVA film in China with experience more than 20 years.

BAOJUN company persist in development with scientific and technology invention, having a number of doctoral team in R&D and R&D lab. covering an area of 1000m<sup>2</sup>. We have obtained more than 20 technical inventions and application patents. Our products have been certificated to TUV ,CTI and SGS etc. We have passed certificate of quality system ISO9001: 2015 and environment management ISO14001.

### 2. Product introduction

POE packaging film is made of ethylene and  $\alpha$ -olefin copolymer (referred to as copolymerized olefin, PO) resin as the main raw material, which is modified by adding additives. It is the second largest photovoltaic module packaging material after EVA film. It is suitable for the packaging of crystalline silicon cells and thin film cells. It has excellent water vapor barrier properties, electrical insulation and anti-PID performance. It is very suitable for PID-sensitive batteries such as P-type PERC double-sided batteries, N-type PERT double-sided batteries, IBC batteries, etc. Applicable, and especially suitable for frameless double-glass modules, single-glass modules in high-humidity environments, etc.; The product has the following characteristics:

- a. Has a lower water vapor transmission rate;
- b. Has longer-acting anti-PID performance;



c. Excellent weather resistance (including high temperature, high humidity, ultraviolet, etc.), anti-PID;

d. Excellent light transmittance to ensure maximum power of the module

e. Excellent stability and product compatibility;

BAOJUN Product introduction:

①BJ-P20 high-transmittance and anti-PID type, which is used on glass surface, and the high light transmittance in the ultraviolet region improves the conversion efficiency of the module;

②BJ-P21 high cut-off anti-PID type, used on the back panel, low transmittance in the ultraviolet region can effectively protect the back panel from ultraviolet damage and prolong the service life of components.

### 3.Product Specifications:

performance	Product model	
	BJ-P20	BJ-P21
Thickness (mm)	0.45-1.0	0.45-1.0
Width (mm)	≤1400	≤1400
Length of each roll(m)	150-350	150-350
Surface density deviation(%)	±4	±4
Gram weight (g/cm <sup>3</sup> )	0.83-0.90	0.85-0.90
Degree of cross-linking(%)	≥75	≥75
Tensile strength(MPa)	≥6	≥6
Elongation(%)	≥500	≥500
Water absorption rate (20°C、24h)	<5.0	<5.0
Peel strength with glass(N/cm)	≥60	≥60
Shrinkage(%)	Longitudinal (MD)	≤3.0
	Lateral (TD)	≤1.5



Volume resistivity( $\Omega \cdot \text{cm}$ )		$\geq 5 \times 10^{14}$	$\geq 5 \times 10^{14}$
Breakdown voltage strength (kv/mm)		$\geq 35$	$\geq 35$
Tracking resistance index (V)		$\geq 400$	$\geq 400$
UV aging $\Delta YI$ (120kwh/m <sup>2</sup> , 1000 h)		<5	<5
Damp heat aging $\Delta YI$ (85°C/85%, 1000 h)		<5	<5
Transmittance (%)	380-1100nm	$\geq 91$	$\geq 91$
	290-380nm	$\geq 70$	$\leq 30$

#### 4. Anti-PID products:

The POE packaging film BJ-P20/BJ-P21 product are Baojun New Material's anti-PID products. After packaging with our company's anti-PID products, the component is tested for PID at a temperature of 60°C and a humidity of 85%. After 96 hours, the I-V characteristic curve of the component is tested. EL image.

I-V characteristics measurement results:

Manufacturer	state	Isc(A)	Voc(V)	Pm (W)	FF (%)	Pm retention rate	FF retention rate
Baojun	early stage	5.844	45.90	201.8	75.30		
	After 96 hours	5.853	45.80	201.0	75.00	99.60%	99.60%

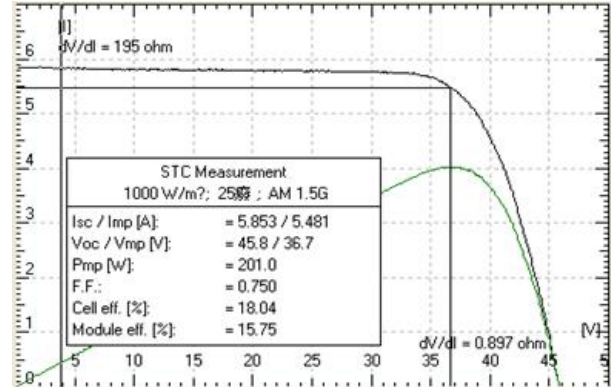
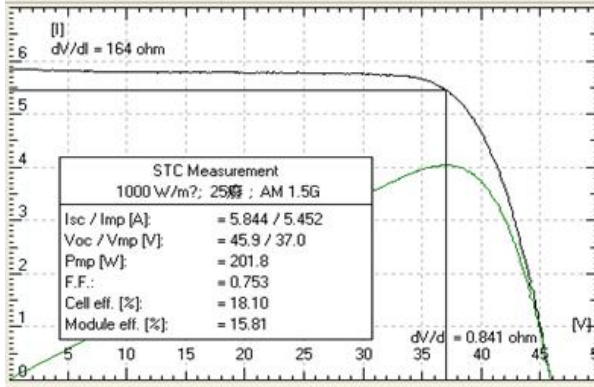
Isc: short circuit current (A) Voc: open voltage (V) FF Curve factor (%) Pm: Maximum output power (W)



Graph::

Before text:

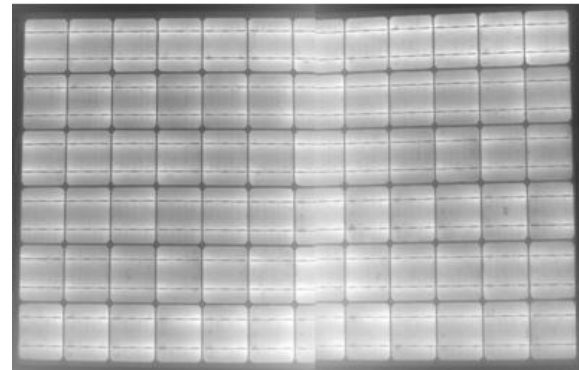
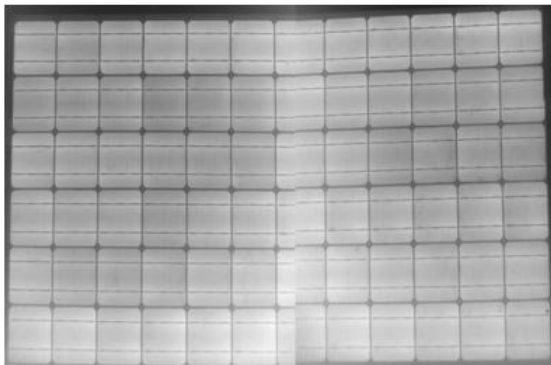
After 96 hours:



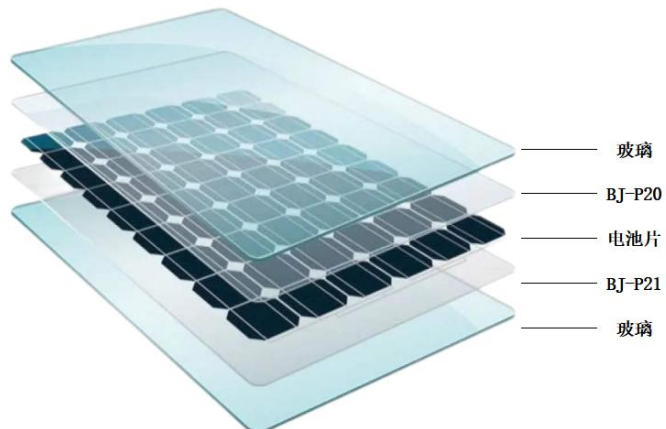
EL Image determination

Early state:

after 96 hours:



## 5.Lamination:





## 5.1. Single cavity lamination technique

Product model	Lamination temperature(°C)	Vacuum time(s)	Holding pressure			Holding time
			one	two	three	
BJ-P20	145±2	360±30	-75	-45	-20	660-720
BJ-P21	145±2	360±30	-75	-45	-20	660-720

## 5.2. Double chamber lamination technique

Product module	First chamber temperature( °C )	Vacuum time(s)	Holding pressure			Holding time	Holding Second (°C)	Vacuuming time (s)	Holding pressure			Holding time
			one	two	three				one	two	three	
BJ-P20	120±2	360±30	-70	-50	-20	180±30	145±2	30±10	-70	-50	-30	480±30
BJ-P21	120±2	360±30	-70	-50	-20	180±30	145±2	30±10	-70	-50	-30	480±30

Note: According to the operation of the customer's equipment, the temperature and time of the laminator can be adjusted appropriately to meet the production requirements. The degree of cross-linking is controlled within the qualified range, and the POE packaging film is controlled to be



about 80%. Other auxiliary materials used must pass the inspection of qualified products by industry-accredited inspection institutions.

## 6. Storage and use:

1、 Store in a cool and dry constant temperature room with a temperature of  $\leq 30^{\circ}\text{C}$  and a humidity of  $\leq 60\%$ ; the storage period of this product is six months;it is recommended to use it up within three months;

2、 Vacuum packaging ,inner packaging 150-350 meters/roll(except for special requirements);

3、 The long -term stacking height of the product should not be too high,preferably less than four layers,so as to avoid bending and deformation of the product due to heavy pressure;

4、 Do not let the product get wet.After opening the packaging or cutting the film,it is recommended to use it up within 48 hours;

5、 In order to avoid abnormal component lamination caused by static electricity,it is recommended to eliminate static electricity in the whole process of component production.