



Standard Product Manual

PV Film Series

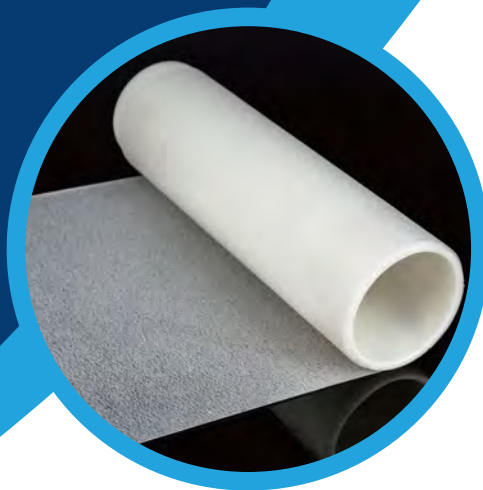
Invented for Materials

Betterial

B601HP & B601P

HIGH TRANSMITTANCE EVA ENCAPSULATION FILM

B601P series is a kind of anti-PID EVA encapsulation film specially developed by parkn-era film to improve the module potential induced attenuation (PID) problem. B601HP & B601P EVA film provides strong and stable adhesion performance to glass and backsheet, excellent long-term resistance to heat and humidity, UV and PID resistance. Perfect matching with various components and auxiliary materials, and good process compatibility with most laminating equipment.



Category

Item	Normal Spec	Customized Spec
Thickness	0.55mm/0.65mm	0.2~0.8mm
Width	1000~1030mm	300~1300mm
Length	350m	150m/350m/400m

Technical Properties

Performance Indicators	Unit	Test Standard	B601HP	B601P
Model/Using Instruction	/	/	Anti PID High Transmission	Anti PID UV Cut Off
Shrinkage Ratio	MD	%	GB/T29848	<3.0
	TD	%	GB/T29848	<1.5
Light Transmittance	280~380nm	%	Baijia Method	>80
	380~1100nm	%	GB/T29848	>91
Peel Strength	EVA/Glass	N/cm	GB/T29848	>80
	EVA/Backsheet	N/cm	GB/T29848	>80
Crosslink Degree	%	GB/T29848	>80	>80
Volume Resistivity	$\Omega \cdot \text{cm}$	GB/T29848	$>1 \times 10^{15}$	$>1 \times 10^{15}$
Damp Heat Test	ΔYI	GB/T29848	<5.0	<5.0
UV Test	ΔYI	GB/T29848	<5.0	<5.0
Anti PID Performance	%	IEC62804	<5.0	<5.0

Laminating Process

Laminated Parameters	Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator	142~148	300~360	480~600
Double Chamber Laminator	A Cavity	120±10	50±10
	The Second Chamber	145±5	10~30

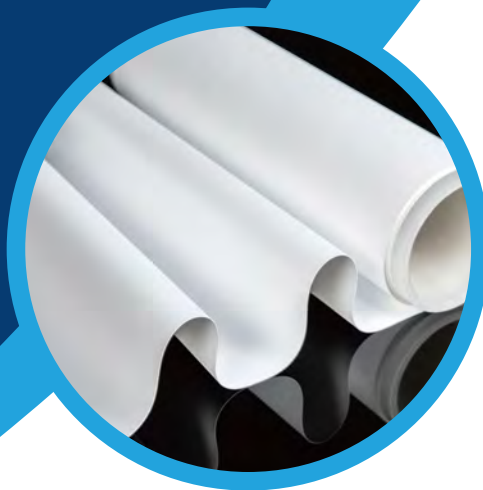
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.
Copyright© Betterial(202305V1)

B601W

WHITE EVA ENCAPSULATION FILM

B601W series is a white adhesive film specially developed for encapsulation between backsheets and batteries of single-glass and double-glass photovoltaic modules.

B601W white EVA film has its unique high reflectivity, which can improve the effective utilization rate of visible light and help PV module to increase generating power. At the same time, we have solved the problem of white film overflow after the component is laminated, and B601W has high reflectivity retention rate and high peel strength retention rate for long-term use.



Category

Item	Normal Spec	Customized Spec
Thickness	0.6mm/0.65mm	0.2~0.8mm
Width	1010~1100mm	300~1300mm
Length	350m	150m/350m/400m

Technical Properties

Items		Unit	Test Standard	B601W
Model/Using Instruction		/	/	High Reflective EVA Film
Shrinkage	MD	%	GB/T29848	≤3.0
	TD	%	GB/T29848	<1.5
Transmittance	280~380nm	%	Baijia Method	<6.0
	380~1100nm	%	GB/T29848	<1.0
Adhesion	EVA/Glass	N/cm	GB/T29848	≥60
	EVA/Backsheet	N/cm	GB/T29848	≥60
Crosslink Degree		%	GB/T29848	>75
Volume Resistivity		Ω·cm	GB/T29848	>1*10 ¹⁴
Reflectivity	400-700nm	%	Baijia Method	≥91
Pre-crosslink Degree		%	Baijia Method	<40

Laminating Process

Laminated Parameters	Temperature (°C)		Vacuum Time (S)		Lamination Time (S)		
	Single	Double	Single	Double	Single	Double	
Single Chamber Laminator	142~148	140~148	300~360	300~360	600±120	1080±120	
Double Chamber Laminator	A Cavity	120±10	120±10	300±120	300±120	180±60	180±60
	The Second Chamber	145±10	145±10	10~30	10~30	480±60	480±60

The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

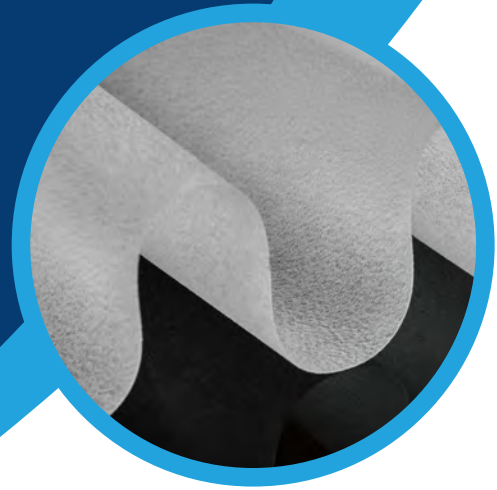
Copyright© Betterial(202305V1)

B602

CROSS-LINKED POE ENCAPSULATION FILM

B602 series of parker film technology developed for POE packaging film for solar PV module packaging.

B602 Poe has excellent water vapor barrier property and weather ability compared with conventional EVA film. Compared with other products, it has better anti-PID performance and better peeling strength retention.



Category

Item	Normal Spec	Customized Spec
Thickness	0.6mm/0.7mm	0.2~0.8mm
Width	1000~1100mm	300~1300mm
Length	150m	150m/350m/400m

Technical Properties

Items	Unit	Test Standard	B602
Model/Using Instruction	/	/	Fast cure & Higher transmittance
Shrinkage	MD	GB/T29848	<3.0
	TD	GB/T29848	<1.5
Transmittance	380~1100nm	GB/T29848	>90
Adhesion	POE/Glass	GB/T29848	>80
	POE/Backsheet	GB/T29848	>80
Crosslink Degree	%	GB/T29848	>70
Volume Resistivity	$\Omega \cdot \text{cm}$	GB/T29848	$>1 \cdot 10^{15}$
Hydrothermal Aging Test	ΔYI	GB/T29848	<3.0
UV Aging Test	ΔYI	GB/T29848	<3.0

Laminating Process

Laminated Parameters	Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator	142~150	300~360	1080±120
Double Chamber Laminator	A Cavity	300±120	240±60
	The Second Chamber	145±10	10~30

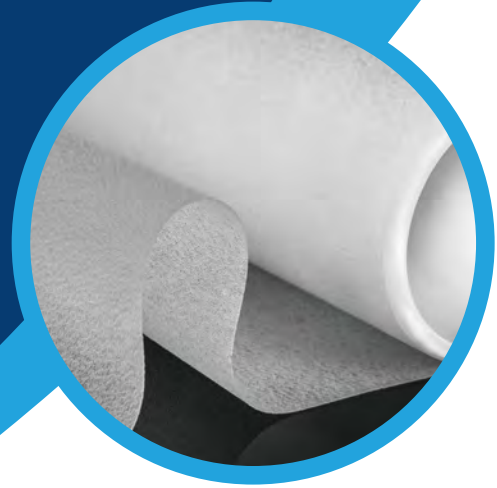
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.
Copyright© Betterial(202305V1)

B602M

CO-EXTRUDED POE FILM

B602M series is a POE & EVA co-extruded adhesive film specially developed for encapsulation between backsheets and batteries of single-glass and double-glass photovoltaic modules.

B602M film Compared with EVA film, it has excellent water vapor barrier performance and weather resistance. Compared with POE film, it has higher cost advantage. Compared with other products, the encapsulation of double glass components has better anti-PID characteristics and better peel strength retention.



Category

Item	Normal Spec	Customized Spec
Thickness	0.55mm/0.65mm	0.2~0.8mm
Width	1000~1200mm	300~1300mm
Length	350m	150m/350m/400m

Technical Properties

Items		Unit	Test Standard	B602M
Model/Using Instruction		/	/	High Transmittance
Shrinkage	MD	%	GB/T29848	<3.0
	TD	%	GB/T29848	<1.5
Transmittance	380~1100nm	%	GB/T29848	>90
Adhesion	POE/Glass	N/cm	GB/T29848	>80
	POE/Backsheet	N/cm	GB/T29848	>80
Crosslink Degree		%	GB/T29848	>70
Volume Resistivity		$\Omega \cdot \text{cm}$	GB/T29848	$>1 \times 10^{15}$
Damp Heat Test		ΔYI	GB/T29848	<3.0
UV Aging Test		ΔYI	GB/T29848	<3.0

Laminating Process

Laminated Parameters		Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator		142~148	300~360	1080±120
Double Chamber Laminator	A Cavity	120±10	300±60	240±60
	The Second Chamber	145±10	10~30	540±60

The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

Copyright© Betterial(202305V1)

B602MW

CO-EXTRUSION WHITE POE FILM

The B602MW series is used for the white POE film encapsulated between the backplane/glass and the cell of a single/double glass photovoltaic module.
PERC, TOPCON single/double glass photovoltaic module.



Product Characteristics

- ✓ Reduce white film spillage after component lamination.
- ✓ Low water vapor transmission rate.
- ✓ Reduce micro-cracks during cell lamination.
- ✓ High reflectivity retention.
- ✓ High weather resistance.

Technical Properties

Performance Indicators		Unit	Test Method	B602MW
Model/Using Instruction		/	/	B602MW
Shrinkage Ratio	MD	%	GB/T29848	≤3.0
	TD	%	GB/T29848	≤2.0
Peel Strength	POE/Glass	N/cm	GB/T29848	≥60
	POE/Backsheet	N/cm	GB/T29848	≥60
Crosslink Degree		%	GB/T29848	≥75
Volume Resistivity		Ω·cm	GB/T29848	≥1*10 ¹⁵
Reflectivity	400-1100nm	%	Baijia Method	≥92
Water Vapor Barrier		g/m ² .day	ISO15106-3	≤10
UV Aging Test		ΔYI	GB/T29848	≤5.0
Anti-PID Performance		%	IEC62804	≤5.0

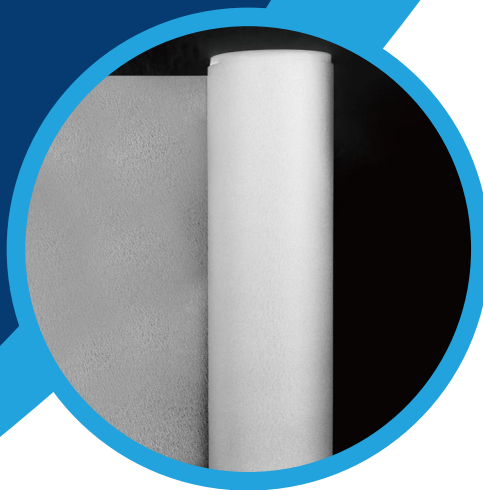
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.
Copyright© Betterial(202307V1)

B601S & B601SP

HIGH-PERFORMANCE LOW ACID EVA ENCAPSULATING FILM

B601S series EVA film, with crosslinking and adsorption control technology, effectively inhibit the production of free acetic acid in the film, significantly reduce the deterioration of batteries and components. At the same time, the film adopts Betterial's patented technology (Chinese invention patent ZL202110291956.1), which can effectively inhibit the hydrolysis of EVA and has excellent anti-moisture and heat resistance.

In high temperature, high humidity, cold and other environments, the B601S can provide more reliable protection for components.



Category

Item	Normal Spec	Customized Spec
Thickness	0.55mm/0.65mm	0.2~0.8mm
Width	1000~1030mm	300~1300mm
Length	350m	150m/350m/400m

Technical Properties

Performance Indicators	Unit	Test Standard	B601S	B601SP
Model/Using Instruction	/	/	Low Acid High Transmission	Low Acid UV Cutoff
Shrinkage Ratio	MD	%	GB/T29848	<3.0
	TD	%	GB/T29848	<1.5
Light Transmittance	280~380nm	%	Betterial	>80
	380~1100nm	%	GB/T29848	>91
Peel Strength	EVA/Glass	N/cm	GB/T29848	>80
	EVA/Backsheet	N/cm	GB/T29848	>80
Crosslink Degree	%	GB/T29848	>80	>80
Volume Resistivity	$\Omega \cdot \text{cm}$	GB/T29848	$>1 \times 10^{15}$	$>1 \times 10^{15}$
Damp Heat Test	ΔYI	GB/T29848	<5.0	<5.0
UV Test	ΔYI	GB/T29848	<5.0	<5.0
Anti PID Performance	%	IEC62804	<5.0	<5.0

Laminating Process

Laminated Parameters	Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator	142~148	300~360	480~600
Double Chamber Laminator	A Cavity	120~130	300~400
	The Second Chamber	145	10

The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.
Copyright© Betterial(202401V1)

B601R

BLACK INFRARED REFLECTIVE ENCAPSULATION FILM

B601R series is a black adhesive film specially developed for encapsulation between backsheets and solar cells of single-glass and double-glass photovoltaic modules.

B601R black adhesive film has the same hue as solar cells and has a beautiful appearance. Its unique infrared high reflection performance can improve the effective utilization rate of visible light and help to increase the power yield of the module. At the same time, the product solves the problem of black film overflow after laminated, and has the characteristics of high reflectivity retention rate and low attenuation rate on peel strength.



Category

Item	Normal Spec	Customized Spec
Thickness	0.45mm/0.5mm/0.55mm/0.65mm	0.2~0.8mm
Width	970~1020mm	300~1300mm
Length	150m	150m/350m/400m

Technical Properties

Items		Unit	Test Standard	B601R
Model/Using Instruction		/	/	Black EVA Film
Shrinkage	MD	%	GB/T29848	≤3.0
	TD	%	GB/T29848	<2.0
Adhesion	EVA/Glass	N/cm	GB/T29848	≥60
	EVA/Backsheet	N/cm	GB/T29848	≥60
Gel Content		%	GB/T29848	>75
Volume Resistivity		Ω·cm	GB/T29848	>1*10 ¹⁴
Reflectivity	760-1100nm	%	Baijia Method	≥70
Pre-crosslink Degree		%	Baijia Method	<40

Laminating Process

Laminated Parameters	Temperature (°C)		Vacuum Time (S)		Lamination Time (S)		
	Single	Double	Single	Double	Single	Double	
Single Chamber Laminator	142~148	140~148	300~360	300~360	600±120	1080±120	
Double Chamber Laminator	A Cavity	120±15	120±15	300±120	300±120	180±60	180±60
	The Second Chamber	145±10	145±10	10~30	10~30	480±60	480±60

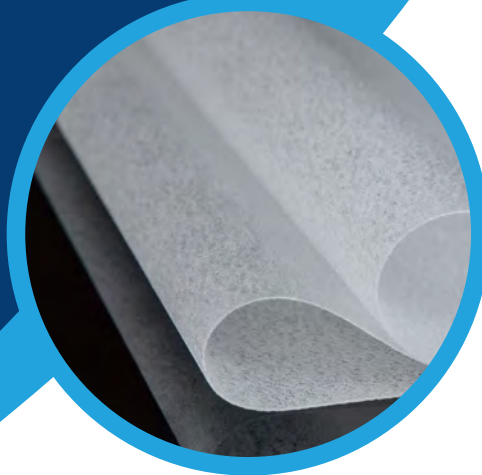
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

Copyright© Betterial(202305V1)

B606 & B606P

THERMOPLASTIC ADHESIVE FILM TPO

B606 series is a thermoplastic adhesive film for the packaging of perovskite and film photovoltaic modules developed by Betterial. Compared with conventional EVA adhesive film, it has the advantages of low packaging temperature and low water vapor transmission rate, and maintains excellent weather resistance and good adhesion under low temperature packaging conditions. It can be widely used for the packaging of perovskite batteries and thin film battery modules.



Category

Item	Normal Spec	Customized Spec
Thickness	0.45~0.6mm	0.2~0.8mm
Width	970~1297mm	300~1300mm
Length	150m	150~450m

Technical Properties

Items	Unit	Test Standard	B606	B606P	
Model/Using Instruction	/	/	High Transmission	UV Cut Off	
Tensile Strength	MPa	ISO 527-3	>18	>18	
Adhesion to Back-sheet	N/cm	GB/T 29848-2018	≥40	≥40	
Adhesion to Glass	N/cm	GB/T 29848-2018	≥80	≥80	
Shrinkage (120°C x 3min)	MD	GB/T 29848-2018	≤3.0	≤3.0	
	TD	GB/T 29848-2018	≤2.0	≤2.0	
Transmittance	280~380nm	GB/T 29848-2018	≥80	≤20	
	380~1100nm	GB/T 29848-2018	≥85	≥85	
Volume Resistivity	Ω·cm	GB/T 29848-2018	≥1*10 ¹⁵	≥1*10 ¹⁵	
DC Breakdown Strength	KV/mm	IEC 60243	>200	>200	
Aging Test DH2000hr	Yellowness Index	ΔYI	GB/T 29848-2018	≤5.0	≤5.0
	Adhesion to Glass	N/cm	GB/T 29848-2018	≥40	≥40
UV Aging Test	120KW·h	ΔYI	GB/T 29848-2018	≤5.0	≤5.0
WVTR	23°Cx85% RH 500um	g/m ² ·day	ISO 15106-3	≤5.0	≤5.0

Laminating Process

Laminated Parameters	Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator	110~120	360±60	600±120

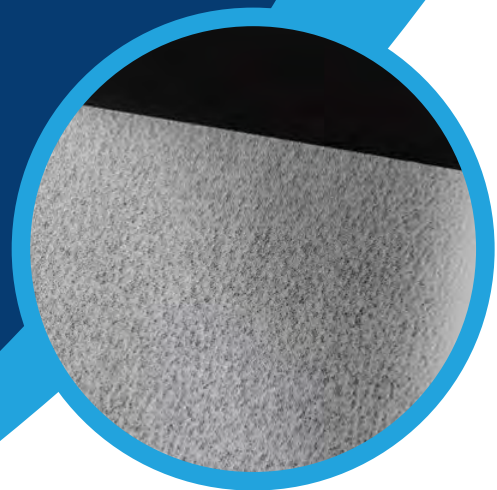
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.









Copyright© Betterial(202305V1)

B606L & B606LP

THERMOPLASTIC TPO ADHESIVE FILM

B606 series is a thermoplastic film for perovskite components and thin-film module packaging developed by Betterial. Suitable for perovskite, CIGS, lightweight components.



- 
Non-crosslinked
- 
High Weather Resistance
- 
High Light Transmittance
- 
High Gain
- 
Low Lamination Temperature
- 
Low Water Vapor Transmission Rate
- 
Low Attenuation of Aging Stripping Force
- 
No Release of Small Molecules

Technical Properties

Performance Indicators		Unit	Test Method	B606L	B606LP
Model/Using Instruction		/	/	High Transparency	Deadline
Tensile Strength		MPa	ISO 527-3	≥10	≥10
Adhesion to Glass		N/cm	GB/T 2709	≥80	≥80
Shrinkage Ratio (120°C x 3min)	MD	%	GB/T 29848	≤3.0	≤3.0
	TD	%	GB/T 29848	≤2.0	≤2.0
Light Transmittance	280~380nm	%	ASTM-003	≥75	≤10
	380~1100nm	%	ASTM-003	≥85	≥85
Volume Resistivity		Ω·cm	IEC62788-1-2	≥1*10 ¹⁵	≥1*10 ¹⁵
DC Breakdown Strength		KV/mm	IEC 60243	≥200	≥200
Aging Test DH2000hr	Yellowness Index	ΔYI	GB/T 29848-2018	≤5.0	≤5.0
	Adhesion to Glass	N/cm	GB/T 29848-2018	≥40	≥40
UV Aging Test	120KW·h	ΔYI	GB/T 29848-2018	≤5.0	≤5.0
WVTR	23°Cx85% RH 500um	g/m ² ·day	ISO 15106-3	≤5.0	≤5.0

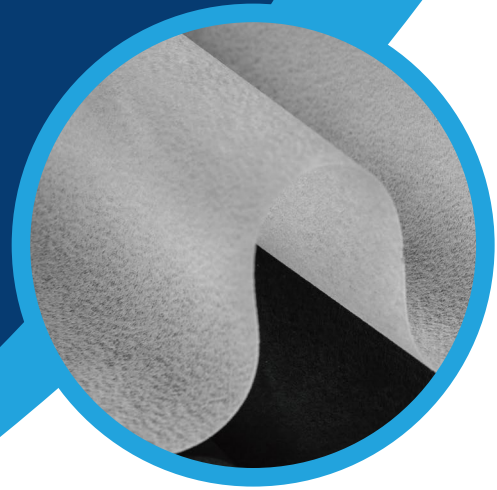
The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

Copyright© Betterial(202307V1)

HI802 & HI802P

HJT INTEGRATED ENCAPSULATION FILM

HI802 and HI802P are integrated films for HJT cell encapsulation. The integrated film can reduce delamination after aging and has perfect shaping effect on solder strip when laminating. The Film also has positioning function on solder strip so as to reduce the process of low temperature welding and reduce the use of silver paste.



Category

Item	Normal Spec	Customized Spec
Thickness	0.45~0.6mm	0.2~0.8mm
Width	970~1297mm	300~1300mm
Length	300m	150~450m

Technical Properties

Items		Unit	Test Standard	HI802	HI802P
Model/Using Instruction		/	/	High Transmission	UV Cut Off
Shrinkage Ratio	MD	%	GB/T29848	<3.0	<3.0
	TD	%	GB/T29848	<1.5	<1.5
Light Transmittance	280~380nm	%	GB/T29848	>80	<20
	380~1100nm	%	GB/T29848	>90	>90
Peel Strength	Glass	N/cm	GB/T29848	>80	>80
	HJT Cell	N/cm	Baijia Method	>40	>40
Crosslink Degree		%	GB/T29848	>75	>75
Volume Resistivity		Ω -cm	GB/T29848	$>1*10^{15}$	$>1*10^{15}$
Aging Properties PCT 48h 121°C 100RH	Yellowness Index	ΔYI	GB/T29848	<3.0	<3.0
	HJT Cell	N/cm	Baijia Method	>30	>30
UV Aging Test	30kW/h 60°C	ΔYI	GB/T2984	<3.0	<3.0

Laminating Process

Laminated Parameters		Temperature (°C)	Vacuum Time (S)	Lamination Time (S)
Single Chamber Laminator		142~148	300~360	900±180
Double Chamber Laminator	A Cavity	125±10	300±60	300±60
	The Second Chamber	148±10	60±30	540±60

The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

Copyright© Betterial(202308V1)

HIGH-BARRIER WHITE ADHESIVE FILM

Ultra-low pre-crosslinking white adhesive film for high barrier packages.

HJT、PERC、TOPCON single glass photovoltaic module.



Product Characteristics

- ✓ Better scattering effect; High reflection angle; High power gain.
- ✓ Low water vapor transmission rate.
- ✓ Low packaging cost;
Adhesive film thickness 10-12 mm narrower than glass.
- ✓ Better plasticizing effect,
Enables tight connection between the soldering tape and the cell.
- ✓ Reduce micro-cracks during cell lamination.

Technical Properties

Performance Indicators		Unit	Test Method	Data
Model/Using Instruction		/	/	High-barrier white adhesive film
Shrinkage Ratio	MD	%	GB/T29848	≤3.0
	TD	%	GB/T29848	≤1.5
Reflectivity	400-1100nm	%	GB/T29848	≥90
Peel Strength	Film/Glass	N/cm	GB/T29848	≥150
	Film/Backsheet	N/cm	GB/T29848	≥150
PCT48	Film/Glass	N/cm	GB/T29848	≥40
Peel Strength	Film/Backsheet	N/cm	GB/T29848	≥40
Crosslink Degree		%	GB/T29848	≥80
Volume Resistivity		Ω·cm	GB/T29848	≥1*10 ¹⁴
Water Vapor Barrier		g/m ² .day	ISO15106-3	≤5.0

The technical parameters in Betterial product manual are for reference only. Technical specifications are subject to change without any prior notice.

Copyright© Betterial(202307V1)



Changzhou Betterial Film Technologies Co.,Ltd.

666 Wujin East Avenue, Changzhou, Jiangsu, China

Tel : 400 928 6399 Postcode: 213000

www.betterial.cn