Standard Product Manual

Photovoltaic Backsheet Series

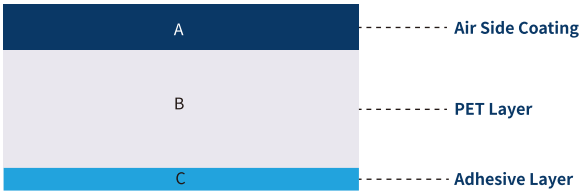
Invented for Materials

Betterial

BPF-801

PHOTOVOLTAIC BACK SHEET

Photovoltaic Back Sheet with Double-sided coating PET structure (white and black). Good insulation performance and strong bonding,Excellent barrier and heat and humidity resistance .



Technical Properties

Performance Indicators		Unit	Test Method	BPF-801	BPF-801C
Total Thickness		μm	/	303±5%	253±5%
Strcture		/	/	Coating/PET/Coating	
Colour		/	/	White/Black	
Fluorine Content		/	/	Fluoropolymer Coating/Fluoropolymer Free-NF	
Tensile Strength	MD	N/mm^2	GB/T 13542.2-2021	⩾150	⩾150
	TD	N/mm^2	GB/T 13542.2-2021	⩾160	⩾160
Elongation At break	MD	%	GB/T 13542.2-2021	⩾120	⩾120
	TD	%	GB/T 13542.2-2021	⩾100	⩾100
Heat Shrinkage Rate	MD	%	GB/T 13542.2-2021	⩽0.6	⩽1.0
	TD	%	GB/T 13542.2-2021	⩽0.6	⩽1.0
Coating Adhesion (grade)		grade	GB/T 9286-2021	grade 0	grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60	⩾60
Breakdown Voltage		kV	GB/T 1408.1-2016	⩾20	⩾17
Maximum System Voltage		V	GB/T 16935.1-2008	1500	1000
WUTR		$g/m^2 \cdot d$	GB/T 26253-2010	⩽2.0	⩽2.5
Reflectivity		%	ASTM-E424-71	⩾75	⩾75
Transmittance		%	ASTM-E424-71	/	/
Hygrothermal Aging Resistance Test		85℃*85%RH, 2000h	GB/T 2423-2016	No stratification, no bubbles, Δb⩽2	
Boiling Water Treatment	Visual Inspection	/	GB/T 31034-2014	No stratification, no foaming, no folding, no shedding, no pulverization	
	Coating Adhesion	grade	GB/T 9286-2021	Grade 0	

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Betterial
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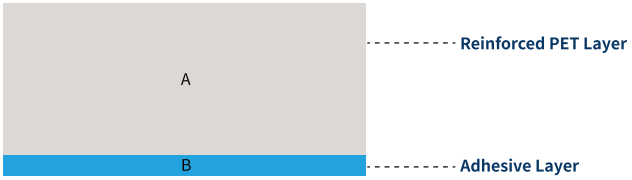
BPF-802

PHOTOVOLTAIC BACK SHEET

White Photovoltaic Back Sheet with multi-layer structure.Good insulation performance and strong bonding fastness.Excellent barrier and moisture and heat resistance.



Technical Properties

Performance Indicators		Unit	Test Method	BPF-802	BPF-802C
Total Thickness		μm	/	303±5%	253±5%
Strcture		/	/	High Weatherability Modifed BOPET Film+Coating	
Colour		/	/	White/Black	
Fluorine Content		/	/	Fluoropolymer Coating/Fluoropolymer Free-NF	
Tensile Strength	MD	N/mm²	GB/T 13542.2-2021	⩾150	⩾150
	TD	N/mm²	GB/T 13542.2-2021	⩾160	⩾160
Elongation At Break	MD	%	GB/T 13542.2-2021	⩾120	⩾120
	TD	%	GB/T 13542.2-2021	⩾100	⩾100
Heat Shrinkage Rate	MD	%	GB/T 13542.2-2021	⩽0.6	⩽1.0
	TD	%	GB/T 13542.2-2021	⩽0.6	⩽1.0
Coating Adhesion (grade)		grade	GB/T 9286-2021	grade 0	grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60	⩾60
Breakdown Voltage		kV	GB/T 1408.1-2016	⩾20	⩾17
Maximum System Voltage		V	GB/T 16935.1-2008	1500	1000
WUTR		g/m²·d	GB/T 26253-2010	⩽2.0	⩽2.5
Reflectivity		%	ASTM-E424-71	⩾75	⩾75
Transmittance		%	ASTM-E424-71	/	/
Hygrothermal Aging Resistance Test		85℃*85%RH, 2000h	GB/T 2423-2016	No stratification, no bubbles, Δb⩽2	
Boiling Water Treatment	Visual Inspection	/	GB/T 31034-2014	No stratification, no foaming, no folding, no shedding, no pulverization	
	Coating Adhesion	grade	GB/T 9286-2021	Grade 0	

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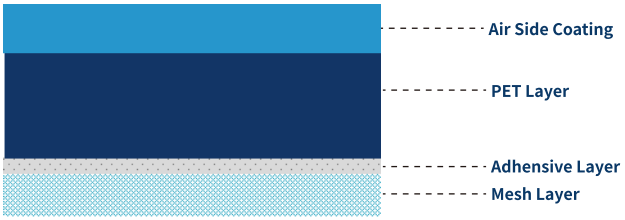
BPF-801M

PHOTOVOLTAIC BACK SHEET

Double-sided white coating , reinforced PET structure , and printed special mesh .Photovoltaic Back Sheet materials Which protect the cells .



Technical Properties

Performance Indicators		Unit	Test Method	BPF-801M
Total Thickness		μm	/	318±5%
Strcture		/	/	Coating/PET/Coating+Mesh
Colour		/	/	White + Black
Fluorine Content		/	/	Fluoropolymer Coating
Tensile Strength	MD	N/mm²	GB/T 13542.2-2021	⩾120
	TD	N/mm²	GB/T 13542.2-2021	⩾120
Elongation At Break	MD	%	GB/T 13542.2-2021	⩾100
	TD	%	GB/T 13542.2-2021	⩾100
Heat Shrink-age Rate	MD	%	GB/T 13542.2-2021	⩽1.0
	TD	%	GB/T 13542.2-2021	⩽1.0
Coating Adhesion (grade)		grade	GB/T 9286-2021	grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	Coating⩾60 Mesh⩾60
Breakdown Voltage		kV	GB/T 1408.1-2016	⩾20
Maximum System Voltage		V	GB/T 16935.1-2008	1500
WUTR		g/m²·d	GB/T 26253-2010	⩽2.0
Reflectivity		%	ASTM-E424-71	Black coating⩾52
Hygrothermal Aging Resistance Test		85℃*85%RH, 2000h	GB/T 2423-2016	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 31034-2014	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	grade	GB/T 9286-2021	Grade 0

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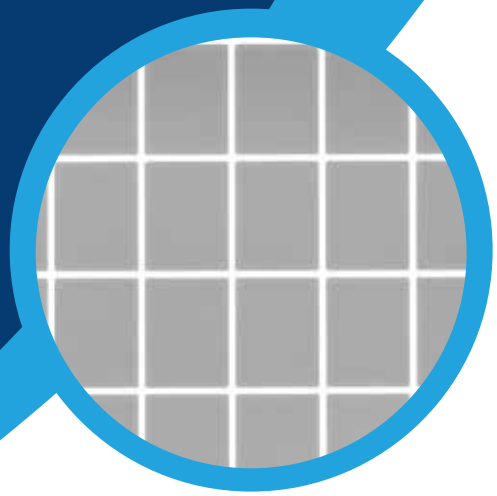
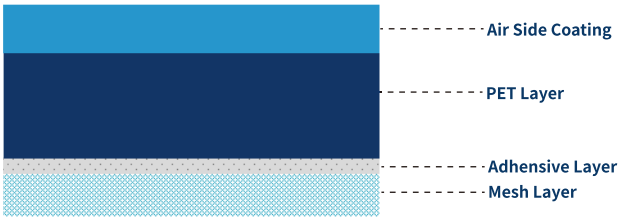
BPF-803M

PHOTOVOLTAIC BACK SHEET

Double-sided clear coating , reinforced PET structure , and printed special mesh .Photovoltaic Back Sheet materials Which protect the cells .





Technical Properties

Performance Indicators		Unit	Test Method	BPF-803M
Total Thickness		μm	/	318±5%
Strcture		/	/	Coating/PET/Coating+Mesh
Colour		/	/	Transparent + White/Black
Fluorine Content		/	/	Fluoropolymer Coating
Tensile Strength	MD	N/mm²	GB/T 13542.2-2021	⩾120
	TD	N/mm²	GB/T 13542.2-2021	⩾120
Elongation At Break	MD	%	GB/T 13542.2-2021	⩾100
	TD	%	GB/T 13542.2-2021	⩾100
Heat Shrink-age Rate	MD	%	GB/T 13542.2-2021	⩽1.0
	TD	%	GB/T 13542.2-2021	⩽1.0
Coating Adhesion (grade)		grade	GB/T 9286-2021	grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	Coating⩾60 Mesh⩾60
Breakdown Voltage		kV	GB/T 1408.1-2016	⩾20
Maximum System Voltage		V	GB/T 16935.1-2008	1500
WUTR		g/m²·d	GB/T 26253-2010	⩽2.0
Reflectivity		%	ASTM-E424-71	White⩾85
Transmittance		%	ASTM-E424-71	⩾88
Hygrothermal Aging Resistance Test		85℃*85%RH, 2000h	GB/T 2423-2016	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 31034-2014	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	grade	GB/T 9286-2021	Grade 0

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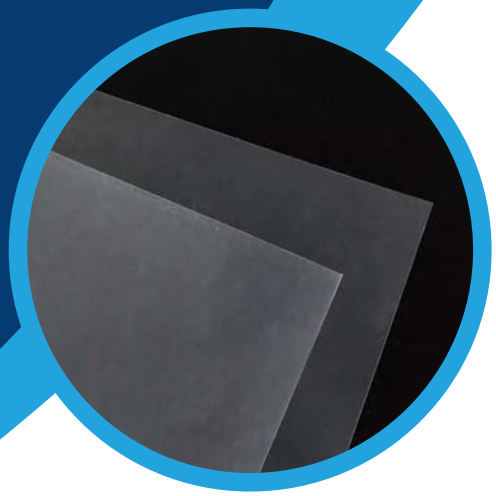
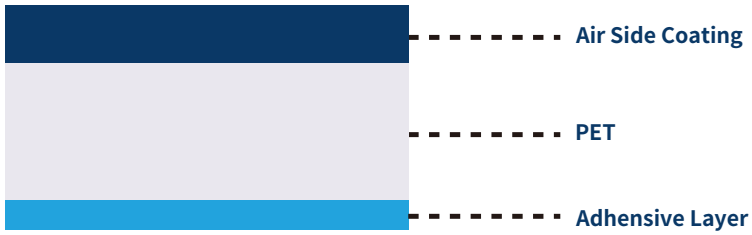
BPF-803

PHOTOVOLTAIC BACK SHEET

BPF-803 is a series of transparent backsheets developed by Betterial, with double-sided transparent coating and reinforced PET structure; It is characterized by good insulating properties, strong bonding fastness, excellent barrier and heat and humidity resistance.





Technical Properties

Performance Indicators		Unit	Test Method	BPF-803
Total Thickness		μm	/	303±5%
Strcture		/	/	Coating+PET+Coating
Colour		/	/	Transparent
Tensile Strength	MD	N/mm²	GB/T 13542.2-2021	⩾120
	TD	N/mm²	GB/T 13542.2-2021	⩾130
Elongation At Break	MD	%	GB/T 13542.2-2021	⩾100
	TD	%	GB/T 13542.2-2021	⩾90
Heat Shrinkage Rate	MD	%	GB/T 13542.2-2021	⩽0.6
	TD	%	GB/T 13542.2-2021	⩽0.6
Coating Adhesion		Grade	GB/T 9286-2021	Grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60
Bond Strength with Silicone		N/10mm	GB 8808-1988	⩾10
Breakdown Voltage		kV	GB/T 1408.1-2016	⩾20
Volume Resistivity		Ω·cm	GB/T 31838.2-2019	$\geqslant 1X10^{15}$
WUTR		g/m²·d	GB/T 26253-2010	⩽2.0
Hygrothermal Aging		85℃*85%RH, 2000h	IEC TS 62788-2	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 17748-2008	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	Grade	GB/T 9286-1998	Grade 0

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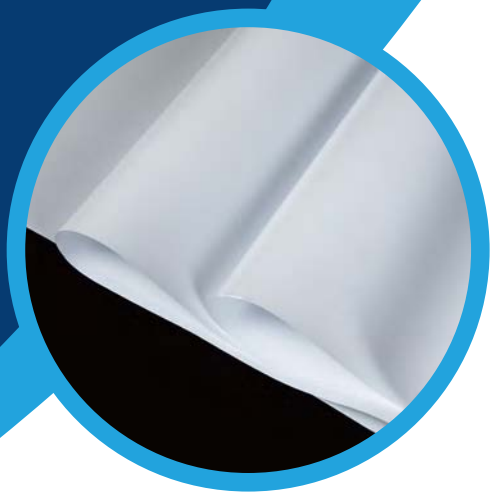
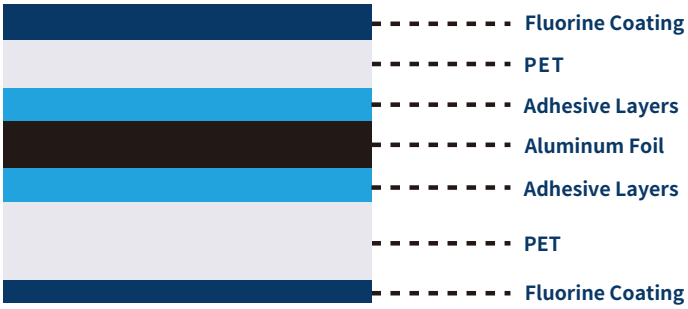
BPF-805

PHOTOVOLTAIC BACK SHEET

PET composite aluminum foil photovoltaic backsheets with good insulating properties, strong bonding fastness, low water permeability, excellent barrier and heat and humidity resistance.

It is used in PV module backsheet material, and plays a protective role for the battery cells.





Technical Properties

Performance Indicators		Unit	Test Method	BPF-805
Total Thickness		μm	/	395μm±10μm
Colour		/	/	White/Black
Tensile Strength	MD	N/mm²	GB/T 13542.2-2009	⩾120
	TD	N/mm²	GB/T 13542.2-2009	⩾120
Elongation At Break	MD	%	GB/T 13542.2-2009	⩾100
	TD	%	GB/T 13542.2-2009	⩾100
Heat Shrinkage Rate	MD	%	GB/T 13542.2-2009	⩽0.6
	TD	%	GB/T 13542.2-2009	⩽0.6
Coating Adhesion		Grade	GB/T 9286-1998	Grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60
Volume Resistivity		Ω·cm	GB/T 1410-2006	⩾1X10 ^{16}
Peel Strength (Al Foil/PET Film)		N/cm	GB/T 2790-1995	⩾4
WUTR		g/m²·d	GB/T 26253-2010	⩽0.001
System Voltage		V	GB/T 1408.1-2016	DTI⩾300um
Batch Color Difference		/	GB/T 7921-2008	/
Hygrothermal Aging		85℃*85%RH, 2000h	IEC TS 62788-2	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 17748-2008	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	Grade	GB/T 9286-1998	Grade 0
Yellowness after PCT48 Aging		/	JESD22-A102-C	Δb⩽2
DH Aging for 2000H		/	IEC TS 62788-2	Retention of Elongation at Break⩾40%, △b⩽2
UV Aging for 250kWh		/	IEC TS 62788-2	Retention of Elongation at Break⩾90%, △b⩽2

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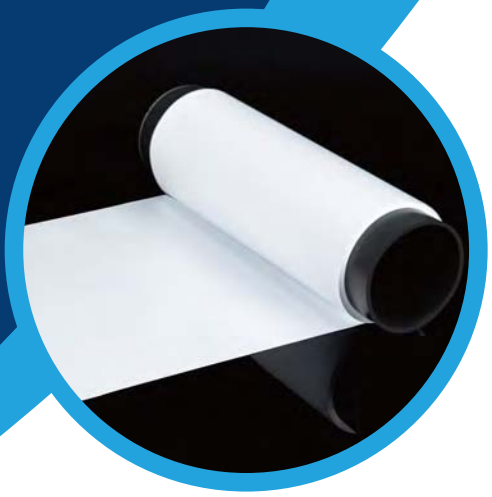
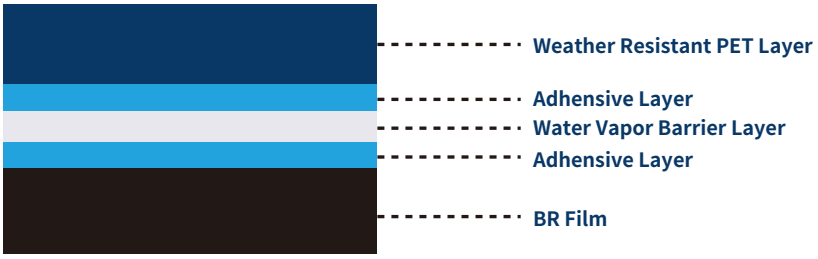
BPF-806

HIGH BARRIER BACKSHEET

PV backsheets are made by composite of EVA adhesive layer made of BR film independently researched and developed by Betterial, support layer made of weather resistant PET, and intermediate layer made of water vapor barrier film.

It is used as a backsheet material for photovoltaic modules, and plays a protective role for the battery cells.





Technical Properties

Performance Indicators		Unit	Test Method	BPF-806
Total Thickness		μm	/	406±5%
Colour		/	/	White/Black
Tensile Strength	MD	N/mm²	GB/T 13542.2-2009	⩾120
	TD	N/mm²	GB/T 13542.2-2009	⩾120
Elongation At Break	MD	%	GB/T 13542.2-2009	⩾100
	TD	%	GB/T 13542.2-2009	⩾100
Heat Shrinkage Rate	MD	%	GB/T 13542.2-2009	⩽0.6
	TD	%	GB/T 13542.2-2009	⩽0.6
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60
Breakdown Voltage		kV	GB/T 13542.2-2009	⩾20
Comparative Tracking Index (CTI)		V	IEC 60664-1	⩾300
Partial Discharge Voltage		VDC	IEC 60664-1	⩾1500
WUTR		g/m²·d	GB/T 26253-2010	⩽0.3
Hygrothermal Aging		85℃*85%RH, 2000h	IEC TS 62788-2	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 17748-2008	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	Grade	GB/T 9286-1998	Grade 0

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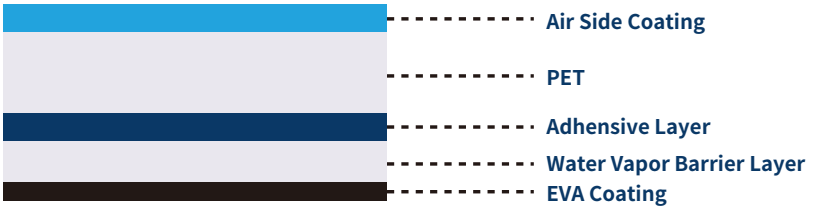
BPF-807

HIGH BARRIER BACKSHEET

PV backsheets coated with highly weather resistant PET as a support layer and water vapor barrier as a water-blocking intermediate layer.
It is used as a backsheet material for photovoltaic modules, and plays a protective role for the battery cells.



Technical Properties

Performance Indicators		Unit	Test Method	BPF-807
Total Thickness		μm	/	310±5%
Strcture		/	/	Weather Resistant PET+Water Vapor Barrier Film
Colour		/	/	Transparent/White/Black
Tensile Strength	MD	N/mm²	GB/T 13542.2-2009	⩾120
	TD	N/mm²	GB/T 13542.2-2009	⩾120
Elongation At Break	MD	%	GB/T 13542.2-2009	⩾100
	TD	%	GB/T 13542.2-2009	⩾90
Heat Shrink-age Rate	MD	%	GB/T 13542.2-2009	⩽0.6
	TD	%	GB/T 13542.2-2009	⩽0.6
Coating Adhesion		Grade	GB/T 9286-1998	Grade 0
Bond Strength With EVA (initial)		N/10mm	GB/T 2790-1995	⩾60
Breakdown Voltage		kV	GB/T 13542.2-2009	⩾20
Comparative Tracking Index (CTI)		V	IEC 60664-1	⩾300
Partial Discharge Voltage		VDC	IEC 60664-1	⩾1500
WUTR		g/m²·d	GB/T 26253-2010	⩽0.3
Hygrothermal Aging		85℃*85%RH, 2000h	IEC TS 62788-2	No stratification, no bubbles, Δb⩽2
Boiling Water Treatment	Visual Inspection	/	GB/T 17748-2008	No stratification, no foaming, no folding, no shedding, no pulverization
	Coating Adhesion	Grade	GB/T 9286-1998	Grade 0

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