### ALT HAN ENCAPSULANTS BACKSHEETS

### **TECHNICAL DATA SHEETS**





### Uncover the true potential of each SOLAR PANEL with WORLD-CLASS ENCAPSULANT & BACKSHEETS

EVA SHEET





### ALISHAN EPE ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan EPE is multilayer coextruded film of EVA-POE manufactured by Alishan Green Energy with the cutting edge manufacturing facility. Alishan EPE is suitable for TopCon, PERC and HJT technologies for M10 or G12 configurations. Alishan EPE ensures acid free environment inside the module and hence provides excellent suitability with any metal grid.

Product		Alishan EPE					
Linear meter	Up to 300 meters						
Width		Up to 1350 mm					
Thickness	Up to 0.80 mm						
Properties	Description	UOM	Alishan EPE				
	Tensile strength		MPa	12 ± 3			
Dhusiantenenstian	Elongation	ASTM D 638	%	≥ 500			
Physical properties	Adhesion with Glass		N/cm	≥ 75			
	Adhesion with Backsheet	ASTM D 903	N/cm	≥ 75			
The sum of Due to other			9/	MD ≤ 3			
Thermal Property	Thermal Shrinkage	160 Deg C / 5 min	n % TD ≤ 1				
<b>Electrical Property</b>	Volume resistivity	ASTM D257-14	Ohm. cm	>1×10 <sup>15</sup>			
	Gel content	ASTM D 2765	%	> 75			
	Transmittance		%	≥ 90			
Optical Properties	Yellowness Index	ASIME 424	1 E 424 -				
			UOM	Values			
Lamination	Vacuum / Evacuatio	Minutes	5 - 8				
Parameters	Lamination / Pressing	g Time	Minutes	10 - 14			
	Lamination Temper	ature	°C	120 – 150			

#### Packing

The EPE rolls are wound a standard 3 inches (inner diameter) paper core, the standard length of EPE film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage

### ALISHAN POE ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan POE is Polyolefin based encapsulant manufactured by Alishan Green Energy Private Limited, in the world-class manufacturing technology with proven raw materials. Alishan POEs are excellent PID and snail trail resistant and suitable for both Glass – Glass and Glass – back sheet modules. Our POE ensures the reliability and life of solar modules in the field.

Product		Alishan POE				
Linear meter	Up to 300 meters					
Width		Up to 1350 mm				
Thickness	Up to 0.80 mm					
Properties	Description	UOM	Alishan POE			
	Tensile strength		MPa	12 ± 3		
Physical properties	Elongation	ASTM D 038	M D 638 % ≥ 50	≥ 500		
Physical properties	Adhesion with Glass	ASTM D 903	N/cm	≥ 70		
	Adhesion with Backsheet	ASTM D 903	N/cm	≥ 70		
	Thormal Chrinkago	160 Deg C / 5 min	%	MD ≤ 3		
Thermal Property	Thermal Shrinkage	160 Deg C / 5 min	70	TD ≤ 1		
Electrical Property Volume resistivity		ASTM 257-14	Ohm. cm	>1×10 <sup>16</sup>		
	Gel content	ASTM D 2765	%	> 60		
	Transmittance		%	≥ 90		
<b>Optical Properties</b>	UV cut off	ASTM E 424	nm	360 ± 30		
	Yellowness Index		-	≤ ]		
			UOM Valu			
Lamination	Vacuum / Evacuatio	n Time	Minutes	6 - 10		
Parameters	Lamination / Pressin	g Time	Minutes	12 - 16		
	Lamination Temper	°C	140 - 160			

#### Packing

The POE rolls are wound a standard 3 inches (inner diameter) paper core, the standard length of POE film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage

### ALISHAN POE - T ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan POE - T is Polyolefin based encapsulant manufactured by Alishan Green Energy Private Limited, in the world-class manufacturing technology with proven raw materials. Alishan POEs are excellent PID and snail trail resistant and suitable for both Glass – Glass and Glass – back sheet modules. Our POE ensures the reliability and life of solar modules in the field.

Product		Alishan POE - T				
Linear meter	Up to 300 meters					
Width		Up to 1350 mm				
Thickness	Up to 0.80 mm					
Properties	Description	Description Standard				
	Tensile strength		MPa	12 ± 3		
Dhysiaal properties	Elongation		TM D 638 % ≥ 500	≥ 500		
Physical properties	Adhesion with Glass	ASTM D 903	N/cm	≥ 70		
	Adhesion with Backsheet	- ASTM D 903	N/cm	≥ 70		
			97	MD ≤ 3		
Thermal Property	Thermal Shrinkage	160 Deg C / 5 min	%	TD ≤ 1		
Electrical Property	Volume resistivity	ASTM 257-14	Ohm. cm	>1×10 <sup>16</sup>		
	Gel content	ASTM D 2765		> 60		
	Transmittance		%	≥ 90		
<b>Optical Properties</b>	UV cut off	ASTM E 424	nm	-		
	Yellowness Index		-	≤ ]		
			UOM	Values		
Lamination	Vacuum / Evacuatio	Minutes	6 - 10			
Parameters	Lamination / Pressin	g Time	Minutes	12 - 16		
	Lamination Temper	rature	°C	140 – 160		

#### Packing

The POE - T rolls are wound a standard 3 inches (inner diameter) paper core, the standard length of POE - T film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage

### ALISHAN FC EVA ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan FC is one of the fast-cure variants of EVA encapsulants manufactured by Alishan Green Energy Private Limited, in world-class manufacturing technology with proven raw materials. Alishan EVAs are PID and snail trail resistant. Our EVA ensures the reliability and life of solar modules in the field, these fast cure EVA encapsulants can be laminated in up to 15 minutes at a temperature varying from 140 - 150° C.

Product		Alishan FC					
Linear meter		Up to 300 meters					
Width	Up to 1350 mm						
Thickness		Up to 0.80 mm					
Properties	Description	Standard	UOM	Alishan FC			
	Tensile strength	ASTM D 629	MPa	≥ 16			
	Elongation	ASTM D 638 % ≥ 600 N/cm ≥ 75	≥ 600				
Physical Properties	Adhesion with Glass	ASTM D 902	N/cm	≥ 75			
	Adhesion with Backsheet	ASTM D 903 N/cm		≥ 75			
Ĩ	VA Content	-	%	28 ± 2			
Water Ingress	Water absorption	ISO 62	%	≤ 0.1			
	The sum of Obside and	160 Deg C / 5 min	%	MD ≤ 3			
Thermal Properties	Thermal Shrinkage			TD ≤ 1			
	Thermal conductivity ISO 22007		W/ m K	0.2475			
	Dielectric Strength	ASTM D 149	kV/mm	32			
Electrical Properties	CTI(Comparative Tracking Index)	IEC 60112	v	600			
Î	Volume resistivity	ASTM 257-14	Ohm. cm	>1×10 <sup>15</sup>			
	Gel content	ASTM D 2765	%	≥ 75			
	Transmittance		%	≥ 91			
Optical Properties	UV cut off	ASTM E 424	nm	360 ± 30			
optical Properties	Yellowness Index		-	≤ ]			
	Refractive Index ASTM D 1218		-	1.48			
			UOM	Values			
Lamination Parameters	Vacuum / Evacuation Time		Minutes	4 - 6			
commution Forometers	Lamination / Pressing Time		Minutes	8 - 10			
	Lamination Temperature		°C	140 - 150			

#### Packing

The EVA rolls are wound on a standard 3 inches (inner diameter) paper core, the standard length of EVA film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes and placed in a pallet.

#### Storage



### ALISHAN FRONT EVA ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan Front EVA is one of the fast-cure variants of EVA encapsulants manufactured by Alishan Green Energy Private Limited, in worldclass manufacturing technology and proven raw materials. This is especially meant for front/top EVA solutions with UV transparency and better PID resistance. Our EVA ensures the reliability and life of solar modules in the field, these fast cures EVA encapsulants can be laminated in up to 15 minutes at a temperature varying from 140 - 150° C.

Product		Alishan Front	t EVA				
Linear meter		Up to 300 me	eters				
Width		Up to 1350 mm					
Thickness		Up to 0.80 r	nm				
Properties	Description	Standard	UOM	Alishan Front EVA			
	Tensile strength	ACTNO 620	MPa	≥ 16			
	Elongation	ASTM D 638	%	≥ 600			
<b>Physical Properties</b>	Adhesion with Glass		N/cm	≥ 75			
	Adhesion with Backsheet	ASTM D 903	N/cm	≥ 75			
	VA Content	-	%	28 ± 2			
Water Ingress	Water absorption	n ISO 62		≤ 0.1			
	Thermal Shrinkage	160 Deg C / 5 min	%	MD ≤ 3			
Thermal Properties			70	TD ≤ 1			
	Thermal conductivity	ISO 22007	W/ m K	0.2475			
	Dielectric Strength	ASTM D 149	kV/mm	32			
Electrical Property	CTI(Comparative Tracking Index	IEC 60112	V	> 600			
	Volume resistivity	ASTM 257-14	Ohm. cm	>1×10 <sup>15</sup>			
	Gel content	ASTM D 2765	%	≥ 75			
	Transmittance		%	≥ 91			
Optical Properties	UV cut off	ASTM E 424	nm	-			
opticul Properties	Yellowness Index		-	≤ ]			
	Refractive Index	ASTM D 1218	_	1.48			
			UOM	Values			
Lamination Parameters	Vacuum / Evacuatio	on Time	Minutes	4 - 6			
	Lamination / Pressir	ng Time	Minutes	8 - 10			
	Lamination Tempe	rature	°C	140 - 150			

#### Packing

The EVA rolls are wound on a standard 3 inches (inner diameter) paper core, the standard length of EVA film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage



### ALISHAN UFC EVA ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan UFC is one of the ultra-fast cure variants of EVA encapsulants manufactured by Alishan Green Energy Private Limited, in the world class manufacturing technology with proven raw materials. Alishan EVAs are PID and snail trail resistant. Our EVA ensures the reliability and life of solar modules in the field, these ultra-fast cure EVA encapsulants can be laminated at upto 12 minutes at a temperature varying from 140 - 150° C.

Product		Alishan UFC					
Linear meter		Up to 300 meters					
Width		Up to 1350 mm					
Thickness		Up to 0.80 mm					
Properties	Description	Standard	UOM	Alishan UFC			
	Tensile strength	ASTM D 629	MPa	≥ 16			
	Elongation	ASTM D 638 %		≥ 600			
Physical properties	Adhesion with Glass	ASTM D 903	N/cm	≥ 75			
	Adhesion with Backsheet	A31MD 903	N/cm	≥ 75			
	VA Content -		%	28 ± 2			
Water Ingress	Water absorption ISO 62		%	≤ 0.1			
	Thermal Shrinkage	160 Deg C / 5 min	%	MD ≤ 3			
Thermal Properties	merniai sininkage	loo beg c / 5 min	76	TD ≤ 1			
	Thermal conductivity	ISO 22007	W/ m K	0.2475			
	Dielectric Strength	ASTM D 149	kV/mm	32			
<b>Electrical Properties</b>	CTI(Comparative Tracking Index)	IEC 60112	V	600			
	Volume resistivity	ASTM 257-14	Ohm. cm	>1×10 <sup>15</sup>			
	Gel content	ASTM D 2765	%	≥ 75			
	Transmittance		%	≥ 91			
Optical Properties	UV cut off	ASTM E 424	nm	360 ± 30			
opticul rioperties	Yellowness Index		-	≤1			
	Refractive Index	ASTM D 1218	-	1.48			
			UOM	Values			
Lamination Parameters	Vacuum / Evacuation Ti	me	Minutes	3 - 4			
Lannington Parameters	Lamination / Pressing Ti	me	Minutes	6 - 8			
	Lamination Temperatu	re	°C	140 - 150			

#### Packing

The EVA rolls are wound on a standard 3 inches (inner diameter) paper core, the standard length of EVA film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage



### ALISHAN UFC - T EVA ENCAPSULANT

## GREEN ENERGY PVT. LTD.

Alishan FC - T is one of the ultra-fast cure variants of EVA encapsulants manufactured by Alishan Green Energy Private Limited, in the world-class manufacturing technology with proven raw materials. This is especially meant for front/top EVA solutions with UV with transparency and better PID resistance. Our EVA ensures the reliability and life of solar modules in the field, these ultra-fast cures EVA encapsulants can be laminated in up to 12 minutes at a temperature varying from 140 - 150° C.

Product	Alishan UFC - T				
Linear meter		Up to 300 meters			
Width		Up to 1350 mm			
Thickness			Up to 0.80 mm		
Properties	Desc	ription	Standard	UOM	Alishan UFC - T
	Tensile strength		ASTM D 638	MPa	≥ 16
	Elonç	gation	ASTM D 030	%	≥ 600
<b>Physical Properties</b>	Adhesion	with Glass	ASTM D 903	N/cm	≥ 75
	Adhesion wi	ith Backsheet	ASTM D 903	N/cm	≥ 75
	VA Co		-	%	28 ± 2
Water Ingress	Water a	bsorption	ISO 62	%	≤ 0.1
	Thermal Shrinkage		160 Deg C / 5 min	%	MD ≤ 3
Thermal Properties	merman	Similkuge	loo beg C / 5 min	70	TD ≤ 1
	Thermal co		ISO 22007	W/ m K	0.2475
	Dielectric	c Strength	ASTM D 149	kV/mm	32
<b>Electrical Properties</b>	CTI(Comparativ	re Tracking Index)	IEC 60112	v	600
	Volume resistivity		ASTM 257-14	Ohm. cm	>1×10 <sup>15</sup>
	Gel content		ASTM D 2765	%	≥ 75
		Transmittance		%	≥ 91
	noution	UV cut off	ASTM E 424	nm	-
Optical Properties		Yellowness Index		-	≤ ]
		Refractive Index	ASTM D 1218	-	1.48
				UOM	Values
Lamination Pa	ramators	Vacuum / Ev	acuation Time	Minutes	3 - 4
Lamination Pd		Lamination /	Pressing Time	Minutes	6 - 8
		Lamination	Temperature	°C	140 - 150

#### Packing

The EVA rolls are wound on a standard 3 inches (inner diameter) paper core, the standard length of EVA film in a roll is up to 300 meters. Each roll was wrapped in polyethene film and placed in a carton box and 9 boxes are placed in a pallet.

#### Storage





Alishan Back Sheet BackPro ABS-PPC is available with 1000 & 1500 V system voltage with airside HPET layer and proprietary cell side Fluoro coating layer.

STRUCTURE DETAILS		ABS - PPC
LAYER NO.	PARTICULARS	
1	Air side HPET layer	нрет
2	Adhesive layer	ADHESIVE
3	Middle PET layer	FLUORO COATING
4	Cell side Fluoro Coating	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS – PPC (1000 V)		ABS – PPC	ABS – PPC (1500 V)	
1	Thickness	μm	Micrometer	195 ±	5 %	310 (-10/+15)		
2	Width	mm	Scale	Up to	1350	Up to	1350	
3	Topollo Strongth	MDg		MD	≥ 100	MD	≥ 100	
3	Tensile Strength	MPa	ASTM D 882	TD	≥ 100	TD	≥ 100	
	Florestion	97		MD	≥ 100	MD	≥ 100	
4	Elongation	%	% ASTM D 882 -	TD	≥ 90	TD	≥ 90	
5		97	150° C / 30 min	MD	≤ 1.0	MD	≤ 1.0	
5	Thermal Shrinkage	%	150° C / 30 min	TD	≤ 1.0	TD	≤ 1.0	
6		N/cm	ASTM D 903	HPET-PET	≥ 4	HPET-PET	≥ 4	
0	Interlayer Adhesion	Grade	GB / T9286	Cell Side	Grade 0	Cell Side	Grade 0	
7	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		≥ 6	0	
8	MVTR	g/m²/day	ASTM F 1249	≤ 0.5		≤ 0.5		
9	CTI	V	IEC 60112	> 6(	00	> 6	00	

#### Packing Storage Condition Shelf life

: Up to 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture



### BackPRO (ABS-CPC)

Alishan Backsheet BackPro ABS-CPC are available in both 1000 V & 1500 V system voltage. The backsheet comes with a proprietary coating layer on both the airside and cell side.

CONS	STRUCTION DETAILS	ABS - CPC
LAYER NO.	PARTICULARS	
1	Air Side Fluoro Coating	FLUORO COATING
2	Middle PET Layer	FLUORO COATING
3	Cell Side Fluoro Coating	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS – CPC – 1000 V		ABS – CPC	: – 1500 V
1	Thickness	μm	Micrometer	275 ±	5 %	310 (-10/+15)	
2	Width	mm	Scale	Up to	1350	Up to	1350
3	Tensile Strength	MPg	MPa ASTM D 882	MD	≥ 100	MD	≥ 100
5	Tensile Strength	INIFU	A31M D 002	TD	≥ 100	TD	≥ 100
4	Elongation	%	ASTM D 882	MD	≥ 100	MD	≥ 100
4	Elongation	/0	A31M D 002	TD	≥ 90	TD	≥ 90
5	Thormal Chrinkago	%	150° C / 30 min	MD	≤ 1.0	MD	≤ 1.0
5	Thermal Shrinkage	76	150° C / 30 min	TD	≤ 1.0	TD	≤ 1.0
6	Conting Adhesian	Crada	GB / T9286	Air Side	Grade 0	Air Side	Grade 0
o	Coating Adhesion	Grade	GB / 19286	Cell Side	Grade 0	Cell Side	Grade 0
7	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		≥ 6	0
8	MVTR	g/m²/day	ASTM F 1249	≤ 0.5		≤ 0.5	
9	СТІ	V	IEC 60112	> 6(	00	> 6	00

Packing Storage Condition Shelf life : Upto 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture





Alishan Back Sheet BackPro ABS-KPC is of 1500 V system voltage with airside PVDF layer and proprietary cell side Fluoro coating layer.

STI	RUCTURE DETAILS	ABS - KPC
LAYER NO.	PARTICULARS	
1	Air side PVDF layer	PVDF
2	Adhesive layer	ADHESIVE
3	Middle PET layer	PET FLUORO COATING
4	Cell side Fluoro Coating	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS – KPC – 1500 V	
1	Thickness	μm	Micrometer	315 ± 5 %	
2	Width	mm	Scale	Up to 1	1350
3	Topoilo Stropath			MD	≥ 100
5	Tensile Strength	MPa	ASTM D 882	TD	≥ 100
4	Flongstion	%	ASTM D 882	MD	≥ 100
4	Elongation	70	ASTM D 862	TD	≥ 90
5		°'	150° C / 30 min	MD	≤ 1.0
5	Thermal Shrinkage	%		TD	≤ 1.0
6	Interlayer Adhesion	N/cm	ASTM D 903	PVDF-PET	≥ 4.0
7	Coating Adhesion	Grade	GB / T9286	Cell Side	Grade 0
8	Adhesion with EVA	N/cm	ASTM D 903	≥ 60	
9	MVTR	g/m²/day	ASTM F 1249	≤ 0.5	
10	СТІ	V	IEC 60112	> 60	00

Packing	
Storage Condition	
Shelf life	

: Up to 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature  $\leq$  30° C & Humidity  $\leq$  60 %

: Recommended to use within 24 months from the date of manufacture



### BackPRO (ABS-KPC-T)

Alishan Back Sheet BackPro ABS-KPC-T is of 1500 V system voltage with airside PVDF layer and proprietary cell side Fluoro coating layer. It comes with the benefits of superior transmittance and hydrophobicity for high efficiency M10 and M12 modules.

	STRUCTURE DETAILS	ABS - KPC-T	
LAYER NO	PARTICULARS	THICKNESS (µm)	
1	Air side transparent PVDF	25	
2	Adhesive layer	10	PVDF ADHESIVE
3	Middle transparent PET	275	FLUORO COATING
4	Cell side Coating	6	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS-KPC-T (1500 V)		
1	Thickness	μm	Micrometer	315 ± 5 %		
2	Width	mm	Scale	Upto	1350	
3	Transmittance	%	ASTM E 424	>{	91	
4	Topoilo Strongth	MDg		MD	≥ 100	
4	Tensile Strength	MPa	ASTM D 882	TD	≥ 100	
-		0/		MD	≥ 100	
5	Elongation	%	ASTM D 882	TD	≥ 90	
		Thermal Shrinkaae %	0/	150°C / 30 min -	MD	≤1.0
6	Thermal Shrinkage	76	150°C / 30 min	TD	≤1.0	
7	Interlayer Adhesion	N/cm	ASTM D 903	PVDF-PET	≥4.0	
8	Coating Adhesion	Grade	GB / T9286	Cell side Grade 0		
9	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		
10	MVTR	g/m²/day	ASTM F 1249	≤ 2		
11	СТІ	V	IEC 60112	> 6	00	

Packing:Storage Condition:Shelf life:

: Up to 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

ISO TÜV

: Recommended to use within 24 months from the date of manufacture

The above properties are a typical range of properties and are not to be used for designing or establishing the limits of specification.

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### BackPRO ABS-KPE

Alishan Back Sheet BackPro ABS-KPE is available for 1000 V and 1500 V system voltage with airside PVDF layer and cell side traditional PE layer. Its high adhesion with encapsulants makes it suitable for highly reliable and efficient solar modules.

	STRUCTURE DETAILS	;	AE
LAYER NO	PARTICULARS	THICKNESS (µm)	
1	Air side PVDF	25	
2	Adhesive	10	
3	Middle PET	275	
4	Adhesive	10	
5	Cell side E layer	50	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS-KPE (1500 V)	
1	Thickness	μm	Micrometer	370 ± 5 %	
2	Width	mm	Scale	Upto	1350
3	Topoilo Strongth	MPa	ASTM D 882	MD	≥ 100
3	Tensile Strength	MPO	ASTM D 002	TD	≥ 100
		0/		MD	
4	Elongation	%	ASTM D 882	TD	≥ 90
5		<i></i>	15000 / 00 min	MD	≤1.0
5	Thermal Shrinkage	%	150°C / 30 min	TD	≤1.0
6	Interlayer Adhesion	N/cm	ASTM D 903	PVDF-PET	≥4.0
7	Interlayer Adhesion	N/cm	ASTM D 903	PET-E layer ≥4.0	
8	Adhesion with EVA	N/cm	ASTM D 903	≥ 60	
9	MVTR	g/m²/day	ASTM F 1249	≤ 2	
10	СТІ	V	IEC 60112	≥ 6	00

Packing Storage Condition Shelf life : Up to 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature  $\le$  30° C & Humidity  $\le$  60 %

: Recommended to use within 24 months from the date of manufacture



### ALISHAN GREEN ENERGY PVT. LTD.

### BackPRO (ABS-KPE-T

Alishan Back Sheet BackPro ABS-KPE-T is available for 1000 V and 1500 V system voltage with airside PVDF layer and cell side traditional PE layer. Its high transmittance and excellent UV resistance makes it suitable for highly reliable and efficient solar modules.

	STRUCTURE DETAILS		
LAYER NO	PARTICULARS	THICKNESS (µm)	
1	Air side transparent PVDF	25	
2	Adhesive	10	
3	Middle transparent PET	275	
4	Adhesive	10	
5	Cell side E layer	50	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS-KPE-T (1500 V)		
1	Thickness	μm	Micrometer	370 ± 5 %		
2	Width	mm	Scale	Upto	1350	
3	Transmittance	%	ASTM E 424	>{	91	
4	Tomoile Otron oth	MDer		MD	≥ 100	
4	Tensile Strength	MPa	ASTM D 882	TD	≥ 100	
-				MD	≥ 100	
5	5 Elongation	%	ASTM D 882	TD	≥ 90	
		%	150°C / 30 min	MD	≤1.0	
6	Thermal Shrinkage			TD	≤1.0	
7	Interlayer Adhesion	N/cm	ASTM D 903	PVDF-PET	≥4.0	
8	Interlayer Adhesion	N/cm	ASTM D 903	PET-E layer	≥4.0	
9	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		
10	MVTR	g/m²/day	ASTM F 1249	≤ 2		
11	СТІ	V	IEC 60112	≥ 600		
Packing	: Up to 200	) meters per roll, s	9 or 12 rolls per pallet			

**Storage Condition** Shelf life

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture



### BackPRO (ABS-CPE-T)

Alishan Back Sheet BackPro ABS-CPE-T is available for 1000 V and 1500 V system voltage with airside Fluorocoating and cell side traditional PE layer. Its high transmittance and excellent UV resistance makes it suitable for highly reliable and efficient solar modules.

	STRUCTURE DETAILS	;	ABS-CPE-T
LAYER NO	PARTICULARS	THICKNESS (µm)	
1	Air side Fluorocoating	15	FLUOROCOATING
3	Middle transparent PET	285	РЕТ
4	Adhesive	10	ADHESIVE E LAYER
5	Cell side E layer	50	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS-CPE-T (1500 V)		
1	Thickness	μm	Micrometer	360 ± 5 %		
2	Width	mm	Scale	Upto	1350	
3	Transmittance	%	ASTM E 424	>{	91	
4	Tanaila Otwanath	MDer		MD	≥ 100	
4	Tensile Strength	MPa	ASTM D 882	TD	≥ 100	
-	-1			MD	≥ 100	
5	Elongation %	%	ASTM D 882	TD	≥ 90	
			15000 / 00	MD	≤1.0	
6	Thermal Shrinkage	%	150°C / 30 min	TD	≤1.0	
7	Coating Adhesion	Grade	GB / T9286	Air Side	Grade 0	
8	Interlayer Adhesion	N/cm	ASTM D 903	PET-E layer	≥4.0	
9	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		
10	MVTR	g/m²/day	ASTM F 1249	≤ 2		
11	СТІ	V	IEC 60112	≥ 600		
acking		•	9 or 12 rolls per pallet	30° C & Humidity < 60 %		

Storage Condition

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture





Alishan Backsheet BackPro ABS-CPE are available in both 1000 V & 1500 V system voltage. The backsheet comes with a proprietary coating layer on air side and traditional PE layer on cell side.

STI	RUCTURE DETAILS	ABS - CPE
LAYER NO.	PARTICULARS	
1	Air Side Fluoro Coating	FLUORO COATING
2	Middle PET Layer	ADHESIVE
3	Adhesive	E LAYER
4	Cell side E Layer	

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS – CPE – 1000 V		ABS – CPE	– 1500 V
1	Thickness	μm	Micrometer	275 ± 5 %		360 (-10/+15)	
2	Width	mm	Scale	Up to	1350	Up to 1350	
3	Topoilo Strongth	MPa	ASTM D 882 -	MD	≥ 100	MD	≥ 100
5	Tensile Strength	MPU		TD	≥ 100	TD	≥ 100
4	Flongstion	%	ASTM D 882 -	MD	≥ 100	MD	≥ 100
4	Elongation	70		TD	≥ 90	TD	≥ 90
5		%		MD	≤ 1.0	MD	≤ 1.0
5	Thermal Shrinkage	70	150° C / 30 min	TD	≤ 1.0	TD	≤ 1.0
6	Coating Adhesion	Grade	GB / T9286	Air Side	Grade 0	Air Side	Grade 0
7	Interlayer Adhesion	N/cm	ASTM D 903	PET-E-Layer		≥ 4.0	
8	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		≥ 60	
9	MVTR	g/m²/day	ASTM F 1249	≤ 2		≤ 2	
10	СТІ	V	IEC 60112	≥ 60	00	≥ 6	00

Packing Storage Condition Shelf life : Upto 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture





Alishan Back Sheet BackPro ABS-PPE is available with 1000 & 1500 V system voltage with airside HPET layer and traditional PE layer on cell side.

	STRUCTURE DETAILS	ABS-PPE			
LAYER NO	PARTICULARS				
1	Air side HPET layer				
2	Adhesive layer	HPET ADHESIV			
3	Middle PET layer	PET ADHESIV			
4	Adhesive	E LAYER			
5	Cell side E layer				

S. NO.	PROPERTIES	UOM	TEST METHOD	ABS – PPE (1000 V)		ABS – PPE (1500 V)	
1	Thickness	μm	Micrometer	225 ± 5 %		370 (-10/+15)	
2	Width	mm	Scale	Up to 1350		Up to 1350	
3	Tensile Strength	MPa	ASTM D 882	MD	≥ 100	MD	≥ 100
				TD	≥ 100	TD	≥ 100
4	Elongation	%	ASTM D 882	MD	≥ 100	MD	≥ 100
				TD	≥ 90	TD	≥ 90
5	Thermal Shrinkage	%	150° C / 30 min	MD	≤ 1.0	MD	≤ 1.0
				TD	≤ 1.0	TD	≤ 1.0
6	Interlayer Adhesion	N/cm	ASTM D 903	HPET-PET	≥ 4	HPET-PET	≥ 4
		N/cm	ASTM D 903	PET-E Layer	≥ 4	PET-E Layer	≥ 4
7	Adhesion with EVA	N/cm	ASTM D 903	≥ 60		≥ 60	
8	MVTR	g/m²/day	ASTM F 1249	< 2		< 2	
9	CTI	V	IEC 60112	> 600		> 600	

#### Packing Storage Condition Shelf life

: Up to 200 meters per roll, 9 or 12 rolls per pallet

: To be stored in sealed packing at temperature < 30° C & Humidity < 60 %

: Recommended to use within 24 months from the date of manufacture





# LIGHTENING THE EXCEPTIONAL **PERFORMANCE**



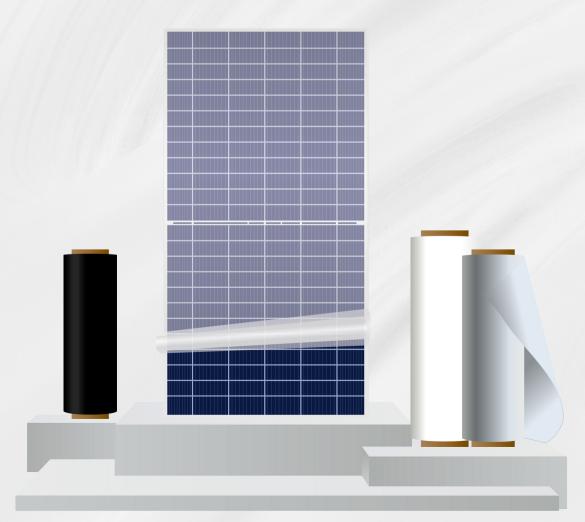
Feel the 100% quality



**High Durability** 



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#### REACH OUT TO US

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