



SAATVIK EPE FILM FOR ENCAPSULATING SOLAR MODULES

SS-EPE UVT-F & SS-EPE UVC-B



Saatvik **SS-EPE UVT-F** and **SS-EPE UVC-B** are highly transparent encapsulant films with excellent weather resistance, strong adhesion to glass and metal materials, and outstanding operational performance. These films enable shorter lamination cycles while maintaining high module efficiency.

The EPE-series provides a highly cost-effective encapsulant solution for PID-free requirements in both P-type and N-type bifacial PV modules. It can successfully withstand a 288-hour PID test under test conditions of 85°C, 85% RH, and 1500 VDC. In addition, EPE-series films exhibit excellent long-term durability and reliability.

The material and structure of EPE-series product is as below

EPE ENCAPSULANT COMBINATION

EVA

POE

EVA

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CHARACTERISTICS

The main characteristics of Saatvik SS-EPE UVT-F & SS-EPE UVC-B film are as follows:

- Excellent long-term resistance against PID (Potential Induced Degradation).
- Superior durability under extreme weather, high temperature, and high humidity conditions.
- Outstanding adhesion to glass, metal, and polymer back sheet, maintaining stable bonding over time.
- High light transmittance and optical transparency for enhanced module efficiency
- Good manoeuvrability during lamination process, no slipping issue
- Strong UV resistance ensuring long operational life.

SPECIFICATION

TYPE	SS-EPE UVT-F		SS-EPE UVC-B	
Gram weight & Tolerance	(380±20) g/m ²	(560±20) g/m ²	(380±20) g/m ²	(560±20) g/m ²
Thickness & Tolerance	0.50±0.10mm	0.65±0.10mm a	0.50±0.10mm	0.65±0.10mm a
Length per roll	130sqm ~ 350sqm	110m ~ 290m	130sqm ~ 350sqm	110m ~ 290m
Width tolerance	(0/+3) mm	(0/+3) mm	(0/+3) mm	(0/+3) mm
Surface structure	Orange peel / Diamond Embossed		Orange peel / Diamond Embossed	

Note: The above specification values can be adjusted for customization.
General thickness specifications, the final apparent thickness should be determined by the embossed pattern.

PRODUCT SPECIFICATION



High Transparency, Low haze



High Gel Content



Low WVTR



Anti-PID



No bubbling, no cell shifting,
high production efficiency



High volume
resistance

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TECHNICAL SPECIFICATION

SAATVIK EPE				SS-EPE UVT-F		SS-EPE UVC-B	
PROPERTY		TEST METHOD		UNITS	TECHNICAL INDEX		
Transmittance	1100nm-380nm	ASTM E 424		%	≥90.5		≥90.5
380nm-290nm		ASTM E 424		%	≥80		≤30
PHYSICAL PROPERTY							
Gel content		ASTM D 2765		Gel%	75≤X≤95		75≤X≤95
ELECTRICAL PROPERTY							
Volume Resistivity		ASTM D 257		(Ω·cm)	≥1.0×10 ¹⁵		≥1.0×10 ¹⁵
Dielectric Strength		ASTM D 149		kV/mm	≥25.0		≥25.0
CTI		IEC 60112		V	≥600		≥600
MECHANICAL PROPERTY							
Strength of Peeling from Glass		ASTM D 903		N/cm	≥65		≥65
Strength of Peeling from Back-sheet		ASTM D 903		N/cm	≥65		≥65
Tensile Strength (Cured)		ASTM D882 (MD)		MPa	≥5.0		≥5.0
		ASTM D882 (TD)		MPa	≥5.0		≥5.0
Elongation at Break (Cured)		ASTM D882 (MD)		%	≥500		≥500
		ASTM D882 (TD)		%	≥500		≥500
SHRINKAGE RATE							
Machine Direction (MD)		ASTM D2732		%	≤3.0		≤3.0
Transverse Direction (TD)		ASTM D2732		%	≤1.5		≤1.5
PID RESISTANCE							
Power loss of PV Modules		IEC62804-2		%	≤5.0		≤5.0
AGING PROPERTY (DURABILITY)							
UV light Resistance (120kWh/m2)		ISO 15106-3, 85°C; 85% RH; 1000hrs		ΔYI	<5.0		<5.0
Heat/Humidity Resistance (DH1000h)				ΔYI	<5.0		<5.0
Yellow Index				ΔYI	<5.0		<5.0
Peel strength with glass				N/cm	≥40		≥40

Notes:

- When preparing gel content samples, the sample preparation structure should be stacked according to the BOM of the actual PV modules.
- For P-type or N-type PV modules, SS-EPE UVT-F is recommended as the encapsulant for glass - to - glass module configurations.
- For P-type or N-type PV modules, SS-EPE UVT-F and SS-EPE UVC-B films are recommended as encapsulant for glass - to - transparent backsheet module configurations.
- Test condition: 85°C, 85%RH, 1500Vdc, and 288h.
 - IS (Indian Standard).
 - ASTM (American Society for Testing and Materials).
 - IEC (International Electro technical Commission).

Precaution:

- Film should not be exposed to the atmosphere for a long time. Significant exposure will cause a decrease in functionality.
- Store in a cool, dry, and well-ventilated place. Keep away from heat and sunlight, and keep away from active oxidizing materials.
- Avoid making contact with bare hands, water, oil, organic solvents and other chemicals

Storage conditions:

- The product shall be stored indoors at temperature between 0°C and 30°C, and humidity below 60% RH.
- Avoiding direct sunshine, and keeping away from heat and dust.
- Shelf life of SS-EPE UVT-F & SS-EPE UVC-B products is 5 months from the production date.
- Use up within 6 hours after opening.

APPLICATION



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After opening the original package, it is recommended to use the product within 8 hours.

Recommended lamination condition for Glass-Glass PV modules:

Lamination Parameter	Double chambers laminator	
	First step	Second step
Hot plate actual temp.	110~135°C	140~155°C
Vacuum Time	360s~390s	0~30s
Press Time	1min~8min	8min~14min

The above process conditions are examples of the representative, and it is necessary to adjust it according to the performance of laminators, components of PV modules, etc. The optimized process condition could be chosen by measuring gel content (>75%) of the encapsulant film in the PV modules.

Note 1:

The gel content in the marked area is more than 80%. The values shown in the table are only for reference purpose only. The actual lamination conditions for encapsulant film in PV modules should be decided based on the real gel content required for the module application.

Note 2:

The lamination process used for the above data was carried out in two steps:

- **First step:** 110~135°C - Vacuum 6min30s - Press 30s (-70kpa) - Press 30s (-50kpa)-Holding(X-7) min (-30kpa).
- **Second step:** 140~155°C - Vacuum 10s - Press 10s (-70kpa) - Press 10s (-50kpa)-Holding X min (-30kpa).

Note:

The specifications and key characteristics covered in this datasheet may vary slightly with continuous innovation and Improvement in comparison to actual products. Saatvik reserves the right to adjust above information accordingly at any time without prior notice.

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