



**Dr. HANS WERNER®
CHEMIKALIEN**

'Solar Encapsulates EVA, POE, EPE Films'

Dr. HANS WERNER CHEMIKALIEN®

ACID FREE EPE(EVA-POE-EVA) FILMS

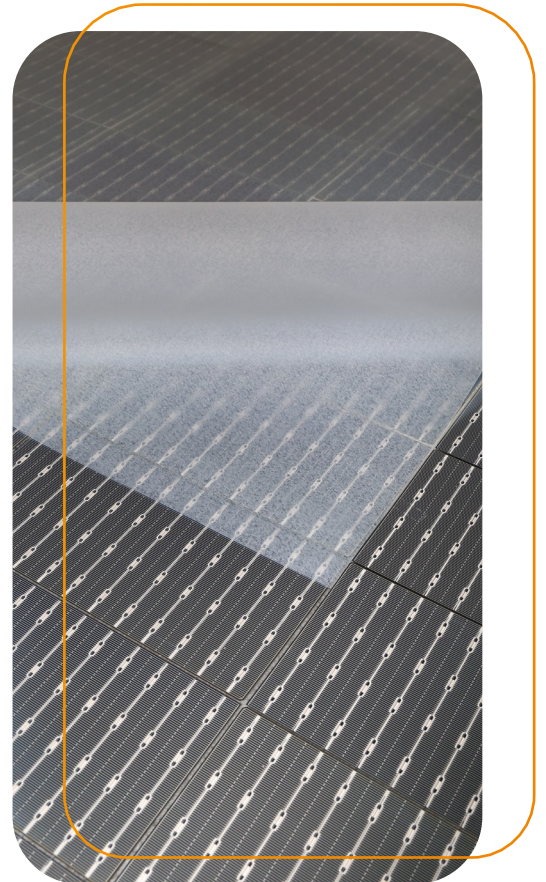
For Encapsulating Solar PV Panels

(EPEU307*C* & EPET306*C* & EPET309*C* FAST CURE)

This series of EVA films is a fast-curing product, especially suitable for encapsulating TOPCON and HJT solar cells

PRODUCT SPECIFICATION

- 01** **Low acid release, active protection for metals, widely compatible with N-type solar cell pastes and HJT solar cells.**
- 02** **High volume resistivity, excellent anti-PID performance across various solar cells.**
- 03** **The products have good compatibility with different brands of glass, backsheets, solder tapes, silver pastes and positioning tapes, as well as equipment.**
- 04** **Wide adhesion adaptability, excellent adhesion with TOPCON/HJT solar cells.**



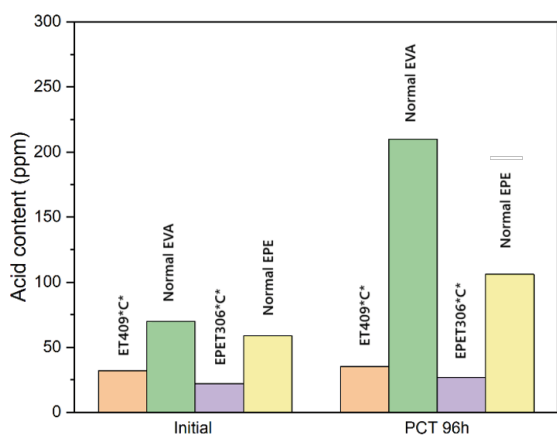
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Technical Specification

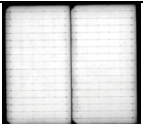
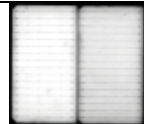
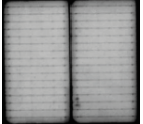
Properties	Unit	EPEU307*C*	EPET306*C*	EPET309*C*
Product Use	/	TOPCON/HJT		HJT
Product Type	/	UV Cut-off	UV Through	UV to Blue light
Shrinkage	%	MD≤3.0; TD≤1.0		
Transmittance (380-1100nm)	%	≥91		
UV Cut-off Wavelength	nm	360nm/380nm(HJT)	UV Through	UV to (400-500)nm
Gel Content	%	≥75		
Volume Resistivity	Ω.cm	≥1.0×10 ¹⁵		
Dielectric Strength	KV/mm	≥28.0		
CTI (Comparative Tracking Index)	V	≥600		
Adhesion	N/cm	≥65		
Tensile Strength	MPa	≥10		
Elongation At Break	%	≥600		
UV Aging	/	ΔYI≤4.0 (120KWh/m ²)		
Component Power Loss	%	≤5 (IEC G2804)		
Humidity and Heat Resistance	/	ΔYI≤4.0		

Films testing standard according to GB/T 29848-2018, PID test condition: 85°C, RH85%, -1500V, 192h

Acid-free Technology of Encapsulating Films

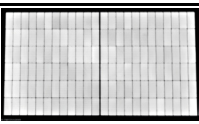
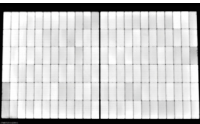
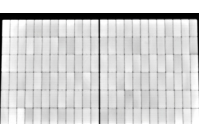
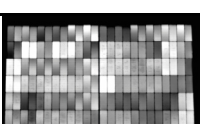


Acid content of different films

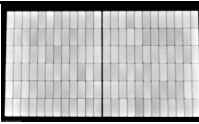
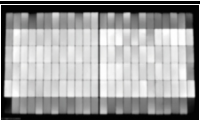
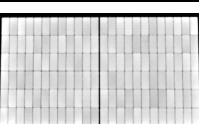
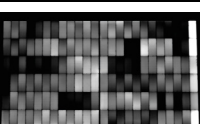
Solar Cell Type	Sample	PCT Test (121 °C, 100%RH)	
		Initial	96h
TOPCON Solar Cells (G/G)	EPET306*C*+EPET*306C (Acid-free)		
	EPE+EPE (Normal type)		

Moisture and Heat Resistance of Low-Acid Film

Anti-PID Performance of Acid-free Films

Encapsulation Film TOPCON Solar Cells		PID Test Results (85°C, 85%RH, -1500V, 192h)		
		Initial	192h	Power Loss (%)
1	EPET306*C*+EPET306*C* (Acid-Free) (G/G)			1.24%
2	EPE+EPE (Normal type) (G/G)			8.48%

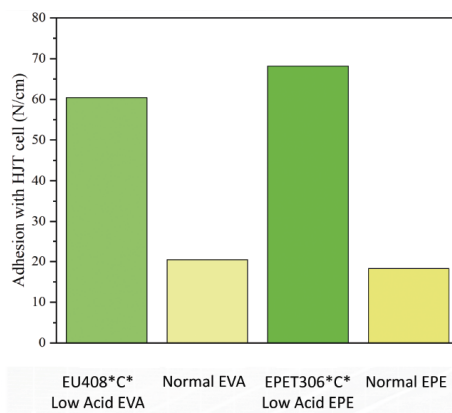
Anti Damp Heat Performance of Acid-free Films

Encapsulation Film TOPCON Solar Cells		Damp Heat Test Results (85°C, 85%RH, 2000h)		
		Initial	2000h	Power Loss (%)
1	EPET306*C*+EPET306*C* (Acid-Free) (G/G)			3.47%
2	EPE+EPE (Normal type) (G/G)			13.41%

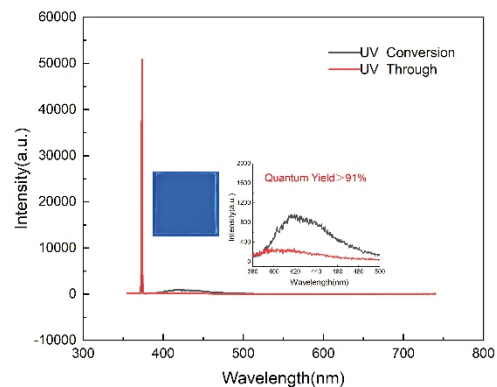
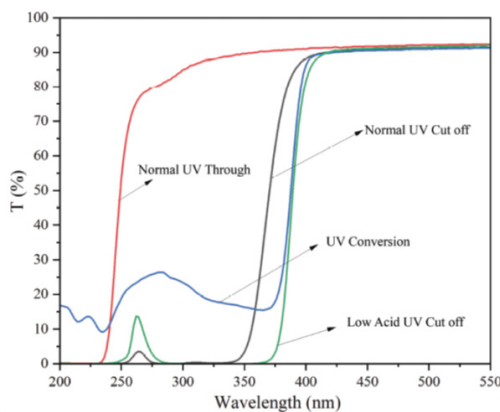
Encapsulating Solutions For HJT G/G Modules

Front Glass		Front Glass	
EPET309*C* (UV conversion)		P ET410*C* (UV conversion) P	
HJT Solar Cells		I HJT Solar Cells I	
EPEU307*C* (UV Cut-off)		B EU408*C* (UV Cut-off) B	
Rear Glass		Rear Glass	

Good Adhesion with HJT Solar Cells

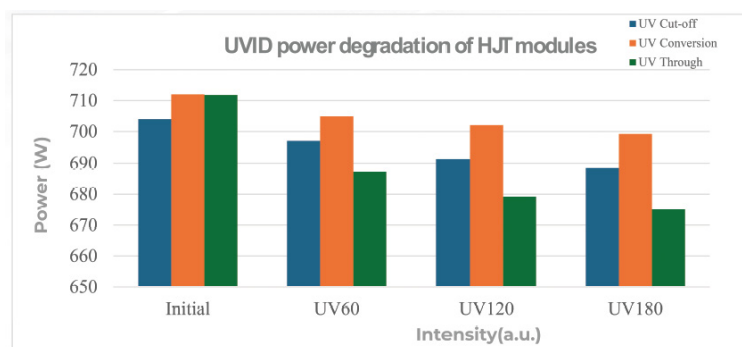


UV Conversion for HJT Solar Cells



UVID Testing Results with UV Light Conversion Film

Structure: Glass / EPE / HJT Solar Cells / EPE / Glass



Recommended Lamination Process

Laminate parameters	Single Chamber	Double Chamber	
		First Chamber	Second Chamber
Temperature (°C)	140~155	130~140	145~155
Vacuum (min)	6~3	4~7	0~3
Press (KPa)	-60/-30/-10	-30~0	-30~0
Keep Press (min)	15~10	2~6	8~15

In the actual lamination process, the cross-linking degree reaches the design value and the component yield is high as a guideline, which is adjusted according to the **actual working conditions on site.**