

Technical Data

PHOTOCAP[®] 15580P

PHOTOCAP[®] 15580P is an ultra fast cure and PID resistant EVA (ethylene vinyl acetate copolymer) photovoltaic encapsulating film.

PHOTOCAP 15580P can be used for all crystalline silicon photovoltaic module constructions, and for many thin film photovoltaic designs. PHOTOCAP 15580P is provided as rolled film ready for use in thermal lamination processes. The material is self-priming for adhesion to glass. The same process equipment and conditions used for other ultra-fast cure PHOTOCAP EVA encapsulant can be used for this product.

Properties	Test Method ASTM	Units	Condition	Results
Physical Mechanical				
Tensile Strength	D638	MPa	23 °C, 250 mm/min elongation rate	15
Ultimate Elongation	D638	%	23 °C, 250 mm/min elongation rate	530
10% Secant Modulus	D638	MPa	23 °C, 250 mm/min elongation rate	24
Hardness	D2240	Shore A/D	23 °C	80 / 25
Adhesion to Glass	STR	N/cm	23 °C	130
MVTR	F1249	g/m ² /day	25 °C/100sccm flow, 100%RH	18
Water Absorption	D570	wt%	23 °C	< 0.1
Optical				
Optical Transmission	E424	%	23 °C, 0.46 mm thickness	91
UV Cutoff Wavelength	E424	nm	23 °C, 0.46 mm thickness	360
Refractive Index	D542	-	23 °C, 0.46 mm thickness	1.48
Electrical				
Volume Resistivity	D257	ohm cm	23 °C/50%RH	>1 x 10 ¹⁵
Dielectric Strength	D149	kV/mm	23 °C/50% RH, 500V/sec	>20

Tests are made in accordance with the current issue of the ASTM, or other cited test method. Test data reported here are nominal values measured on extruded films, 0.5 mm thick, or compression molded sheets and test bars, which have been cured at 150 °C for 7 minutes with a laboratory press. Optical measurements made with glass-EVA coupons with high transmission solar glass.

STR Locations

Email: sales@STRSolar.com
 Tel: 1 860 272 4235

STR – United States of America
 10 Water Street
 Enfield, CT. USA 06082

STR – Malaysia
 Plot D20, Jalan Tanjung A/3
 Port of Tanjung Pelepas
 Gelang Patah, Johor, Malaysia 81560

STR - Spain
 Parque Tech de Asturias, Parcela
 36
 Llanera, Asturias, España
 33428

STR – China
 Changkun Ind. Park No.26
 Nanxin Road, Sha Jiabang
 Changshu, Suzhou, China 215542

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AGENCY APPROVALS:

PHOTOCAP 15580P is a UL listed product in category QIHE2 Photovoltaic Polymeric Materials. Please refer to UL file number E310488.

PRODUCT VARIATIONS:

Suffix	Release Paper	Shrinkage	Notes
15580P/UF	Yes	Zero	STR's User Friendly (UF) technology allows sheets to be cut closer to size, resulting in less voids and shifting of ribbon and cells
15580P/UFP	No	Minimal	Paperless UF option, resulting in minimal shrinkage
15580P/PL	No	Higher than UF or UFP	Possesses a greater tendency to shrink but perfectly acceptable for use in most applications

PROCESS GUIDELINES:

Vacuum Lamination Step		Heat Cure Cycle	
Nominal Temperature	145 - 150 °C	Platen Temperature	145 - 150 °C
Vacuum Range	< 60 mbar	Cure Time	8 min
Evacuation Time	4 min	Applied Bladder Pressure	910 mbar
EVA Melting Range Via DSC	65 - 75 °C	Target Temperature within the Encapsulant	140 °C
		Time Above the Target Temperature	> 3 min

Processing conditions shown here are a recommended starting point for a crystalline silicon photovoltaic module processed with a typical 2-step vacuum lamination system. Actual values required to achieve desired cure levels will depend on the specific PV module design and the lamination process used.

The temperature of the encapsulant should be at or above the EVA melting range before pressure is applied for the cure cycle. The encapsulant should reach the target temperature during the cure cycle, and should remain above that target temperature for the time shown. Temperatures within encapsulant should be periodically measured with embedded thermocouples to assess temperature uniformity of the laminator heating plate and the rate of heat transfer to the PV module. More information about how to laminate PV modules with PHOTOCAP encapsulants is available from STR.

All PHOTOCAP grades are based upon over 30 years of STR's commercial experience in the photovoltaic market.

For further information, please contact the nearest Specialized Technology Resources office or agent.

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