

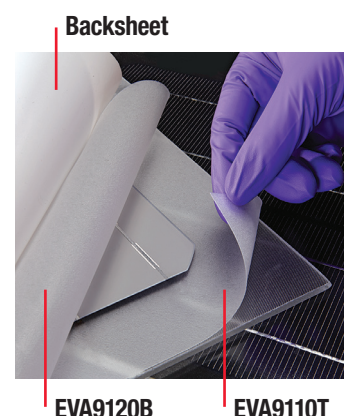
## 3M™ Solar Encapsulant Film EVA9110T and EVA9120B Ethylene Vinyl Acetate Encapsulant for High Efficiency Solar Cells

### Introduction

3M™ Solar Encapsulant Film EVA9110T and EVA9120B are designed for high efficient solar cells in PV modules. EVA9110T functions as the top layer, taking extra light from the UltraViolet spectrum to help increase panel output; EVA9120B serves as the bottom layer, blocking UV light to help protect the backsheet. EVA9110T and EVA9120B are compatible with most existing lamination machines and lamination process and can provide strong, stable sealing and bonding properties in the long run.

### Storage

Shelf life is 6 months under recommended storage conditions. The product should be stored indoors with the temperature controlled between 0-30°C and relative humidity below 60%, avoiding direct sunlight. The product should not be placed near any heating equipment or exposed in a dusty place. Check the package box of stored product before unfolding. The product should be used up as soon as possible after the package is opened. Any unused product should be properly sealed with original package or similar package.



### Features

- Superior PID resistance protection for solar modules.
- Durable bonding strength with both glass and backsheet
- Excellent UV and damp-heat stability
- EVA9110T helps increase the power output of solar modules, and EVA9120B enhances the UV stability of the panels
- Good compatibility of EVA9110T with EVA9120B

### Typical Physical Properties (data not for specification purposes)

	Items	Test Method <sup>1</sup>	Units	Typical Value		
				EVA9110T	EVA9120B	
Physical	Thickness	ASTM F2251	mm	0.4-0.65		
	Density (Uncured)	ASTM D792	g/cm <sup>3</sup>	0.92		
	Tensile (Cured)	MD	ASTM D882	MPa	18	
		TD		MPa	16	
	Elongation (Cured)	MD		%	960	
		TD		%	810	
Adhesion to Glass	ASTM D903	N/cm	100			
Water Absorption (Cured)	ASTM D570	wt%	0.12			
Electrical	Volume Resistivity (Cured)	ASTM D257	Ω·cm	1.1 × 10 <sup>15</sup>		
Optical	Refractive Index (Cured)	ASTM D542	—	1.49		
	Transmittance (Cured)	ASTM D1003	%	92	91	
	UV-Cut Off (Cured)	—	nm	310	390	
Thermal	CTE (Cured) <sup>1</sup>	ASTM E831	µm/m°C	280		
Durability	UV Resistance (32kWh/m <sup>2</sup> )	ASTM G154	—	1.4	0.5	
	UV Resistance (32kWh/m <sup>2</sup> )		—	2.0	1.0	
	Damp Heat Resistance	IEC 61215	—	0.6	0.6	
	(85% RH, 85°C 1000h)		—	1.5	1.5	

<sup>1</sup>Contact 3M for additional information on test methods.

### Precautionary Information

Refer to Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, visit [www.3M.com/msds](http://www.3M.com/msds) or call 1-800-364-3577 or (651) 737-6501.

### Suggested Laminating Conditions

Condition	Suggested Value U.S. (metric)
Lamination Temperature	293 – 311°F (145 – 155°C)
Evacuation Time	3 – 5 minutes
Press Time	8 – 13 minutes

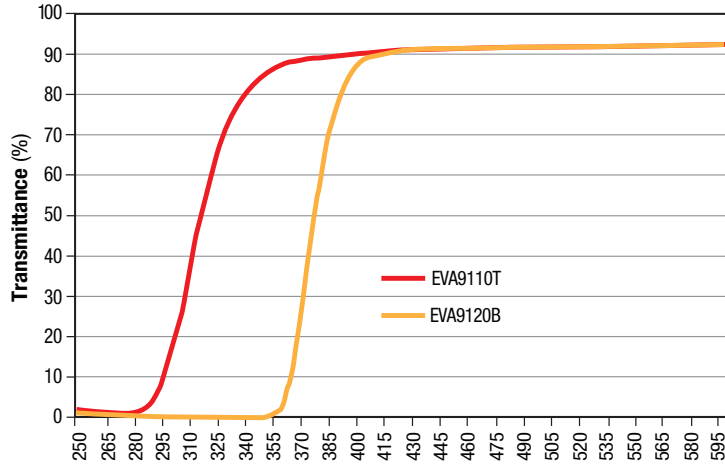


Figure 1: Comparative transmittance of EVA9110T and EVA9120B

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For more information on our solar manufacturing product line, contact 3M Renewable Energy at 800-755-2654 or visit us at [www.3M.com/solar](http://www.3M.com/solar).

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