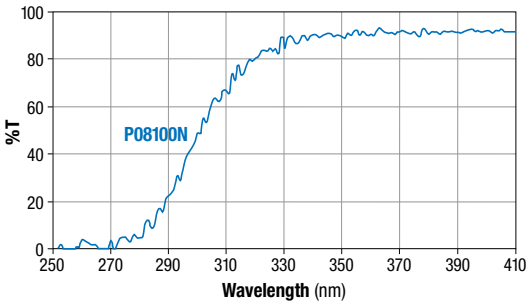
3M™ Solar Encapsulant Film PO8100N

Polyolefin Encapsulant for Photovoltaic Modules

Introduction

3M™ Solar Encapsulant Film PO8100N is a fast cure thermosetting encapsulant designed for high efficiency solar cells in PV modules that enable higher transmission of ultraviolet and visible light to increase module power output (see graph below).

Polyolefin Encapsulants Transmission Windows



Features

- Conformable and flexible for ease of lamination
- Durable bonding strength with both glass and backsheet
- Excellent UV and damp-heat stability
- Very low shrinkage rate
- High light transmission
- No acetic acid/No corrosion
- 1/10th MVTR vs. EVA
- Good compatibility with CIGS Modules
- >130°C Creep
- No transmission loss after aging (>1000 hrs)

Typical Physical Properties (data not for specification purposes)

Items		Typical Value	Test Method[1]
Type		Thermoset	
Thickness (Uncured), mil		18	ASTM F2251
Density (Uncured), g/ cm^3		0.8683	ASTM D792
Shrinkage (unrestricted, 150°C for 15 min)		<5%	
Tensile (Cured), lbf		19.57	ASTM D882
Elongation (Cured), %		2000	ASTM D882
Adhesion to Glass, N/cm		>100	ASTM D903
Water Absorption (Cured), wt%		<0.01	ASTM D570
MVTR, g/m^2· day		5.7 (38°C, 100% RH)	
Hardness (Cured), Shore A		72	ASTM D2240
Dielectrical Strength (Cured), KV/mm		50	ASTM D149
Volume Resistivity (Cured) @ RT, Ω · cm		6E + 14	ASTM D257
Refractive Index (Cured)		1.49	ASTM D542
Haze, %		<4%	
Yellowness Index		<0	
Transmittance (Cured), %		91	ASTM D1003
UV-Cut Off (Cured), nm	PO8100N	310	
Dimensional Stability (Uncured), %	MD	3.3	ASTM D1204
	TD	0.7	
Continuous Service Temperature, °C		>90	
Damp Heat Resistance (85% RH, 85°C 1000h)	Δb*	0.75	IEC 61215
	ΔT%	0	

[1] Contact 3M for additional information on test methods.

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Storage

Shelf life is 6 months under proper storage conditions. The product should be stored indoors with the temperature controlled between 0°C and 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 unfolded. Any unused product should be properly sealed with original package or similar package.

Suggested Laminating Conditions

Condition	Suggested Value
Lamination Temperature	302°F (160°C)
Evacuation Time	4 Minutes
Press Time	11 Minutes

Vacuum time and temperature in the laminator are very critical for final properties. Use of thermocouples is suggested to monitor the temperature to achieve the right gel percentage.

DSC and DMA can be used for designing the appropriate lamination cycle if temperature and time are other than the suggested conditions listed above.

For optimum performance, gel percentage is recommended to be ideally between 70% to 85%.

Contact 3M for additional information.

Precautionary Information

Refer to the product label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

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Other Areas
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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.

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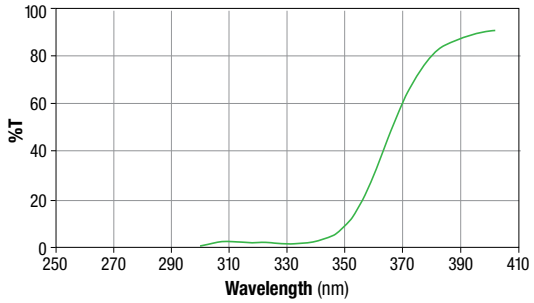
3M™ Solar Encapsulant Film PO8510

Polyolefin Encapsulant for Photovoltaic Modules

Introduction

3M™ Encapsulant Film PO8510 offers protection against UV aging and weathering - while enabling maximum visible light transmission to solar cells with UV cut-off wavelength 350 nm (see graph below).

Polyolefin Encapsulants Transmission Window



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Density (Uncured), g/ cm^3		0.86	ASTM D792
Shrinkage (unrestricted, 150°C for 15 min)		<5%	
Tensile (Cured), lbf		19.57	ASTM D882
Elongation (Cured), %		>1000%	ASTM D882
Adhesion to Glass, N/cm		>100	ASTM D903
Water Absorption (Cured), wt%		<0.01	ASTM D570
MVTR, g/m^2· day		5.5	
Hardness (Cured), Shore A		80	ASTM D2240
Dielectrical Strength (Cured), KV/mm		55	ASTM D149
Volume Resistivity (Cured) @ RT, Ω · cm		1.0×10^{14}	ASTM D257
Refractive Index (Cured)		1.49	ASTM D542
Haze, %		<4%	
Yellowness Index		<0	
Transmittance (Cured), %		91	ASTM D1003
UV-Cut Off (Cured), nm		350	
Dimensional Stability (Uncured), %	MD	3.3	ASTM D1204
	TD	0.7	
Continuous Service Temperature, °C		>90	
Damp Heat Resistance (85% RH, 85°C 1000h)	Δb*	0.75	IEC 61215
	ΔT%	0	

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Suggested Laminating Conditions

Condition	Suggested Value
Lamination Temperature	320°F (160°C)
Evacuation Time	4 Minutes
Press Time	11 Minutes

Vacuum time and temperature in the laminator are very critical for final properties. Use of thermocouples is suggested to monitor the temperature to achieve the right gel percentage.

DSC and DMA can be used for designing the appropriate lamination cycle if temperature and time are other than the suggested conditions listed above.

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