

DuPont™ PV5200 Series

photovoltaic encapsulant sheets
based on DuPont™ Butacite® PVB

Proven laminating speed and efficiency adapted to thin-film and glass-glass photovoltaic module manufacturing



DuPont offers the world's broadest choice of photovoltaic encapsulants, including EVA-, PVB-, ionomer- and copolymer-based sheet and resins, to help make PV modules more robust and efficient.

START WITH A PROVEN PERFORMER

As a global leader in polyvinyl butyral (PVB) manufacturing, DuPont offers supply chain reliability, innovation capability, and unmatched application development and logistical support to meet the needs of a dynamically evolving PV industry.

For photovoltaic modules made with one or more layers of glass, and especially for thin-film technologies, DuPont™ PV5200 Series PVB sheets, based on DuPont™ Butacite®, come with the world's longest history of safety glass performance, laminating knowhow, and international building code compliance.

SHEETS OPTIMIZED FOR PV MODULE MANUFACTURING

DuPont™ PV5200 Series sheets are an excellent source for glass-glass adhesion, and for mechanical, adhesive, melt-flow and chemical stability in contact with new thin-film module designs and materials of construction.

With DuPont as your primary or secondary supplier of well-qualified PVB encapsulant sheets, you gain access to PV-specific sheet thicknesses from from 15 mil (0.38 mm) to 45 mil (1.14 mm), helping assure you of commercial module manufacturing competitiveness from the start.

DuPont™ PV5200 Series PVB-based encapsulant sheets are clear and pliable, with excellent flow characteristics, well suited to encapsulation using nip-roll/autoclaves and vacuum laminating equipment. Table 1 provides basic properties data for the DuPont™ PV5200 Series sheet material.



energy for a
thriving world™

DuPont™ PV5200 Series PVB-based encapsulants have been tested for compatibility with a wide variety of thin-film photovoltaic module materials

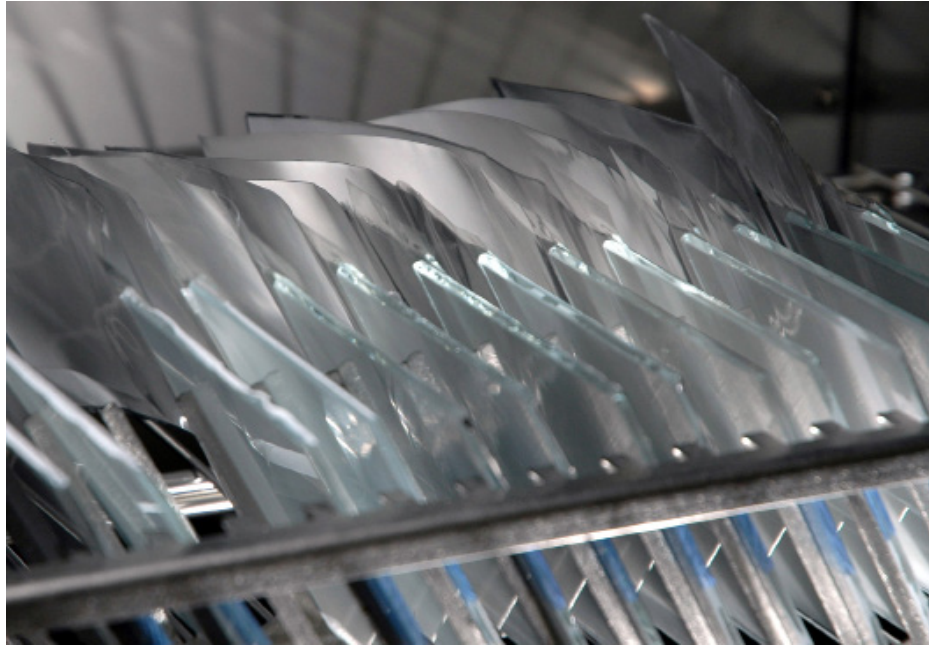


Table 1 -- Properties Data for DuPont™ PV5200 Series Encapsulants

Physical Properties				
Property	Test Method	Units	Test Conditions	Value
Specific Gravity	ASTM D792		23°C	1.07
Specific Heat (Cp)	ASTM E1269	Joules/kg-°C	50°C	1973
		BTU/lb-°F	122°F	0.47
Mechanical Properties				
Property	Test Method	Units	Test Conditions	Value
Tensile Strength	ASTM D638	Mpa	23°C / 50% RH	28.1
		Kpsi		4.08
Elongation at Break	ASTM D638	%	23 °C / 50% RH	275
Young's Modulus	ASTM D5026	Mpa	1% Strain, 23 % RH, 23°C	11
		Kpsi		1.60
Tensile Creep	DuPont	log%	23°C / 28% RH	1.45
Optical Properties				
Property	Test Method	Units	Test Conditions	Value
Refractive Index	ASTM D542		23°C	1.48
Optical Transmission(400-1105 nm) (Encapsulant only, no glass-30 mils)	ASTM D1003	%		91.7
Thermal Properties				
Property	Test Method	Units	Test Conditions	Value
Coefficient of Thermal Expansion	ASTM D696	meters/meter-°C	0-100°C	4.12 x 10 ⁻⁴
		inch/inch-°F		2.29 x 10 ⁻⁴
Melt Flow Rate	ASTM D1238	g/10 min	150°C / 4.9 kg	1.3
Electrical Properties				
Property	Test Method	Units	Test Conditions	Value
Surface Resistivity	ASTM D257	Ohms	23°C / 30% RH	2 x 10 ¹³
Volume Resistivity	ASTM D257	Ohm-cm	23°C / 30% RH	2 x 10 ¹¹
Dielectric Constant - 30 mil	ASTM D150		25°C / 1Hz	6.5
Moisture Properties				
Property	Test Method	Units	Test Conditions	Value
WVTR- 30 mil (0.76 mm)	ASTM F1249	g/m ² -day	38°C / 100% RH	50

UNMATCHED R&D SUPPORT

During the last two years, DuPont has invested more in R&D and capital facilities to serve the PV industry, than any other encapsulants supplier. No supplier offers a wider set of encapsulants than DuPont, ranging from traditional EVA resins to newer thin-film encapsulants such as PVB, ionomer-based materials, and other polymers now emerging from DuPont labs.

Working with DuPont science also enables you to pursue new designs and alternative PVB sheets that can help your modules distinguish themselves in the market. No other research partner can better help you find more productive paths to thin-film manufacturing speed and cost-efficiency, whether you stay with PVB or want to test alternatives.

CROSS-DISCIPLINED EXPERTISE, TO HELP YOU EXPLORE

DuPont™ PV5200 Series encapsulants are part of a broad and growing portfolio of PV-related products from DuPont, drawing not only from traditional PV supply experience but also from related industries such as packaging films and seals, roofing liners and membranes, and industrial panel manufacturing.

DuPont supports its DuPont™ PV5200 Series customers with a dedicated 30-person PV encapsulants application development team offering access to fully equipped DuPont™ PV materials and module assembly and testing labs in America, Europe and Asia Pacific.

PV encapsulants technical development and test support capability from DuPont ranges from weathering and material interaction to full-scale module assembly, efficiency, dielectric and mechanical testing.

For more information about DuPont™ PV5200 Series encapsulants or other DuPont Photovoltaic Solutions:

Toll-Free: 888-387-8337

International: 1-302-996-7918

Fax: 1-302-355-4056

photovoltaics.dupont.com

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