CNCGLASS
CNC Ucolin Interlayer Technology Co., Ltd.
SHENZHEN, GD, CHINA
Peter Lin · cnc@cncglass.com · WhatsApp / Mobile +86 15013829504
WeChat wecan365 · www.cncglass.com

Why EVA Encapsulant Remains a Cornerstone of Solar Modules

The layer that holds the module together

A photovoltaic module is a stack, not a single material. Across most of the crystalline-silicon industry that stack is front glass, a sheet of encapsulant, the cell string, a second sheet of encapsulant, and a backsheet or a second pane of glass. Ethylene-vinyl acetate film is still the encapsulant most often chosen for that role. It is requested because it can be laminated on widely installed equipment, because it bonds well to glass and to common backsheets, and because a well-formulated, well-cured sheet will protect the cells for the working life of the module.



Figure 1. Solar EVA encapsulant in roll form, prior to lay-up in the module stack.

Protection here means more than “keeping the rain out.” The film has to exclude moisture and ionic paths that drive corrosion and potential-induced degradation, cushion the cells against mechanical shock and thermal expansion, and remain optically clear so that light is coupled into the cell rather than scattered or absorbed in the polymer. When those jobs are done, the module can be sold against a long power warranty with a straight face. When they are not, the failure is often blamed on the cells or the glass, though the encapsulant was the weak link.

How the film earns its keep in service

High transmittance in the visible and near-infrared is the first contribution to energy yield. Additives then determine how the film ages: ultraviolet stabilizers, antioxidants, and the peroxide system that crosslinks the EVA during lamination. After a correct cycle, the film is no longer a soft, easily melted sheet; it is a gelled network that holds dimensions, resists creep, and keeps peel strength. Weathering—heat, humidity, and UV—tests whether that network was built properly.

PID resistance has become a standard part of this conversation, especially for modules that will sit at high string voltage in a warm, humid climate. The encapsulant’s volume resistivity and its formulation around the glass surface matter. We treat anti-PID performance as a system result—film, glass, cell, and grounding—rather than as a badge that can be printed on any roll.

Working with a manufacturer who understands the stack

An encapsulant is only as useful as the cycle that cures it and the partners who help set that cycle. We would rather see a module maker qualify a film on their own laminator, with their glass and their backsheet, than accept a generic time-and-temperature table as a guarantee. Experienced manufacturers expect that conversation. They can also discuss when a high-transmittance EVA is enough, and when a POE or a co-extruded EPE sheet is the more prudent moisture and PID barrier for a particular cell technology.

That kind of partnership shortens the distance between a trial roll and a stable bill of materials. It also keeps the door open when the factory later changes a cell supplier or moves from a backsheet to a glass-glass design.

Service life is the real product

Extending the life of a module is mostly about preventing slow failures: delamination, corrosion, encapsulant browning, and PID. A sound EVA package addresses each of those, provided it is stored dry, laminated to a sufficient gel content, and paired with materials that are compatible with it. Replacing modules early is far more expensive than choosing the encapsulant carefully at the start.

This is why we still describe EVA as a cornerstone of solar module technology. It is not the only encapsulant chemistry, and it is not automatically the right one for every new cell. It is the chemistry on which much of the world's installed capacity already depends, and it remains a capable, well-understood choice when it is specified and processed with care.

If the encapsulant is treated as a structural, optical, and electrical material—not as a commodity sheet—the module stands a far better chance of delivering the power and the lifetime that were promised on the nameplate.

Contact Us

Brand: CNCGLASS

Company: CNC Ucolin Interlayer Technology Co., Ltd.
Address: SHENZHEN, GD, CHINA
Contact: Peter Lin
Email: cnc@cncglass.com
WhatsApp / Mobile: +86 15013829504
WeChat: wecan365
Website: www.cncglass.com

We can review encapsulant selection and lamination practice for crystalline modules, including anti-PID and high-transmittance EVA grades.