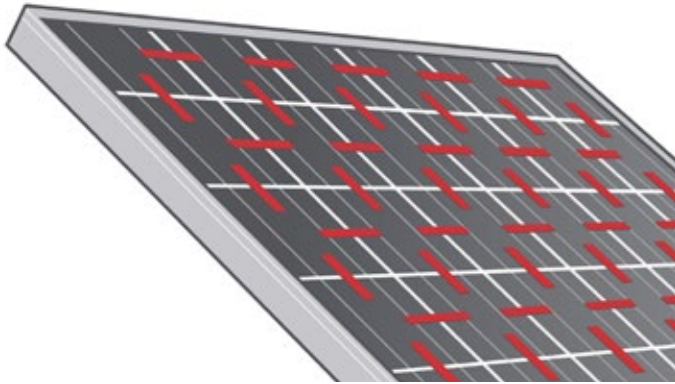


PSA Tapes' Bright Future in the Solar Panel Industry

By Jenna Miles, Avery Dennison Performance Tapes



Once upon a time, solar power was of interest primarily to scientists, tinkerers and homesteaders. But that time has long passed, as today's solar industry sees growing demand, even amidst policy headwinds. As solar panel manufacturers look to find efficiencies and streamline production, they should consider the many advantages of using pressure-sensitive adhesive (PSA) tapes for bonding applications to help transform solar panel design and assembly.

Solar continues to grow in the U.S.

According to a December 2025 report by the Solar Energy Industries Association (SEIA), the U.S. currently has 262 GW of solar capacity - enough to power 45 million homes. The report also notes that solar accounted for 85% of all new electricity-generating capacity added to the US grid in 2025. The fastest growth is in large solar projects, including those at the commercial, community, and utility scales. The average cost of solar is now lower, globally, than other forms of energy, according to the International Renewable Energy Agency (IRENA). Improved storage is making the technology even more feasible for more people.

The solar industry was boosted in recent years by the Inflation Reduction Act (IRA). Enacted by Congress in 2022, the IRA provided tax credits to manufacturers of renewable energy technology. The solar industry added 42 manufacturing facilities with 119 more under development since the IRA was signed into law, according to an August 2024 report by American Clean Power. Many of these facilities are located in the West and Southeast. But every region of the country can boast of at least some solar panel manufacturing capacity.

Even with the Trump administration's sharp divergence on many areas of energy policy, there's reason for continued optimism

when it comes to this industry. As we embrace new, power-hungry technologies such as AI and EVs, there's a growing understanding that our future energy demands will require a broad and diverse selection of domestic sources, including solar.

Benefits of PSA tapes for solar panel manufacturing

PSA tapes present several attractive benefits to solar panel manufacturing as a high-performance, scalable, reliable and versatile bonding solution.

Peel-and-stick ease

Peel off the liner and stick the tape in place. That's all there is to it. And many tapes can be made with repositionable adhesives that allow assemblers to "tweak" placement (or fix mistakes). Tapes create less mess and may be safer to use than some liquid adhesives. They also lend themselves well to automated applications for manufacturers focused on maximum efficiency.

Lightweight

Tapes weigh less than many mechanical fastening systems, contributing to lighter-weight panels. One of the "holy grails" of modern design and engineering, lightweighting brings a range of benefits to solar, such as lower shipping costs and easier handling by installers.

Durability, even in extreme environments

Modern PSA formulas can be fine-tuned to resist extreme temperature swings and exposure to UV, moisture, dust and other contaminants. Many PSAs offer excellent bonding to challenging low-surface-energy substrates such as PE and PP plastic, EVA and Teflon®.

Design flexibility

Finding a spot to punch a hole in a delicate panel to accommodate a nut and bolt can be a challenge. And those holes practically invite water and contaminant intrusion. PSA tapes don't require any of this, giving manufacturers added flexibility while helping prolong a panel's life.

Proven performance

PSA tapes are used for bonding in many industries, including automotive, aerospace, batteries, building and construction, electronics, and others. Many PSA tapes engineered for those industries are already well-suited to the demands of solar panel design and manufacturing.



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Key solar panel bonding applications for PSA tapes

PSA tapes' track record with similar uses in other industries means manufacturers can be confident in their choice of PSA as a material solution across numerous applications.

Component mounting

PSA tapes can be used to securely mount components on the inside and outside of a panel. The ideal tape for this application is double-coated (adhesive on both sides of a carrier), while a foam carrier can add gap-filling properties. Component mounting with gap filling is a common application for PSAs across a wide range of industries, including automotive, aerospace, electronics, general industrial and more.

Dielectric protection

Single-coated tapes with electrically insulating films can provide dielectric protection that is crucial in panel design. Such tapes are already in use in industries such as EV batteries.

Cable fixation

Durable and easy-to-use tapes can be used to help organize and secure wiring within a panel. Tapes are used for this application in numerous industries, including automotive, aerospace, marine, and building and construction.

Edge protection

Tapes can be applied to panel edges and corners to prevent cracking and chipping, protecting the panel during assembly, shipping, installation, and beyond. A stretchable dielectric tape could be ideal for this application.

Summary: Collaboration is Key

As is the case in many industries, solar bonding applications may require highly customized PSA tape solutions. PSA manufacturers can apply their R&D expertise to tweak adhesive chemistries for specific needs, source unique facestock materials, or even produce liners that meet certain requirements.

Tapes are further customized by converters. These experts can die-cut or stamp materials to specific shapes, widths or formats. Converters typically work directly with solar manufacturers to understand their requirements; then with tape manufacturers, if needed, for additional R&D.

About the Author: Jenna Miles is a product development engineer with Avery Dennison Performance Tapes. With over 10 years of industrial experience, she's responsible for developing products for a variety of applications, including the Solar Panel segment. Reach her via email at jenna.miles@averydennison.com or on LinkedIn.