

Pressure-sensitive adhesive tape vs. liquid glue for bonding fiber-reinforced panels to interior surfaces

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Performance
Tapes



Executive summary

Liquid glue remains the industry standard for bonding fiberglass-reinforced panels (FRP) to interior surfaces in residential and commercial construction. However, this method demands considerable labor, extensive cure cycles and strict environmental controls, often creating inefficiencies and delays.

Pressure-sensitive adhesive (PSA) tapes present a transformative alternative — offering greater ease, speed and versatility — positioning them as the suitable solution for streamlined bonding.

Using original laboratory research conducted by Avery Dennison Performance Tapes, this white paper compares the performance of a PSA tape against two liquid glues that are widely used by professional contractors. The products were compared across multiple parameters that might be encountered on a jobsite.

Key findings:

- The PSA tape had an 80% faster installation time than the liquid glues
- The PSA tape provided a superior immediate bond to the surface (“green strength”)
- The PSA tape outperformed the liquid glues in sub-freezing application temperatures

Introduction: Can PSAs help the construction industry address its labor shortage?

A lingering labor shortage is one of the key trends affecting the construction industry. According to the Associated General Contractors of America, 92% of construction firms say they have difficulty finding workers, and 45% say those shortages are the cause of construction delays.¹

Efficiency — the ability to do more with fewer or less-skilled workers — is crucial for the construction industry. Manufacturers can help contractors improve efficiency by optimizing how FRPs are bonded to interior wall surfaces.

Liquid-applied adhesives are the standard for bonding panels. PSAs offer a faster method that helps contractors save time and effort. A PSA can be laminated to FRPs at the factory, then protected by a release liner during packaging and shipping.

How we compared these products

To clearly illustrate the compelling advantages of PSAs in bonding FRPs the Avery Dennison Performance Tapes team undertook a series of original, comparative tests at its ISO-9000-certified Innovation Center in Painesville, Ohio. This research was designed to reveal the direct performance differences that matter most on the jobsite.

This research involved four products:

- Glasliner® 4' x 8' light gray fiberglass reinforced wall panel
- Liquid Nails® FRP-310 Heavy Duty Construction
- Titebond® Fast Grab FRP Adhesive
- Avery Dennison FM 2416, a 36 mil, polyethylene foam PSA tape featuring an acrylic adhesive laminated to both sides of the foam

Installation speed comparison: Which bonding solution installs faster?

Test:

Avery Dennison team members were tasked with installing FRPs using the three bonding test products. They followed applicable manufacturer instructions for each product, and their workflows were timed.

The Liquid Nails and Titebond workflow involved:

1. Apply glue to the panel with a trowel
2. Press the panel against the wall surface
3. Clean up excess glue using solvents such as acetone or alcohol

The Avery Dennison FM 2416 workflow involved:

1. Peel off the release liner
2. Place the panel in position. Apply moderate pressure with a few passes of a roller.

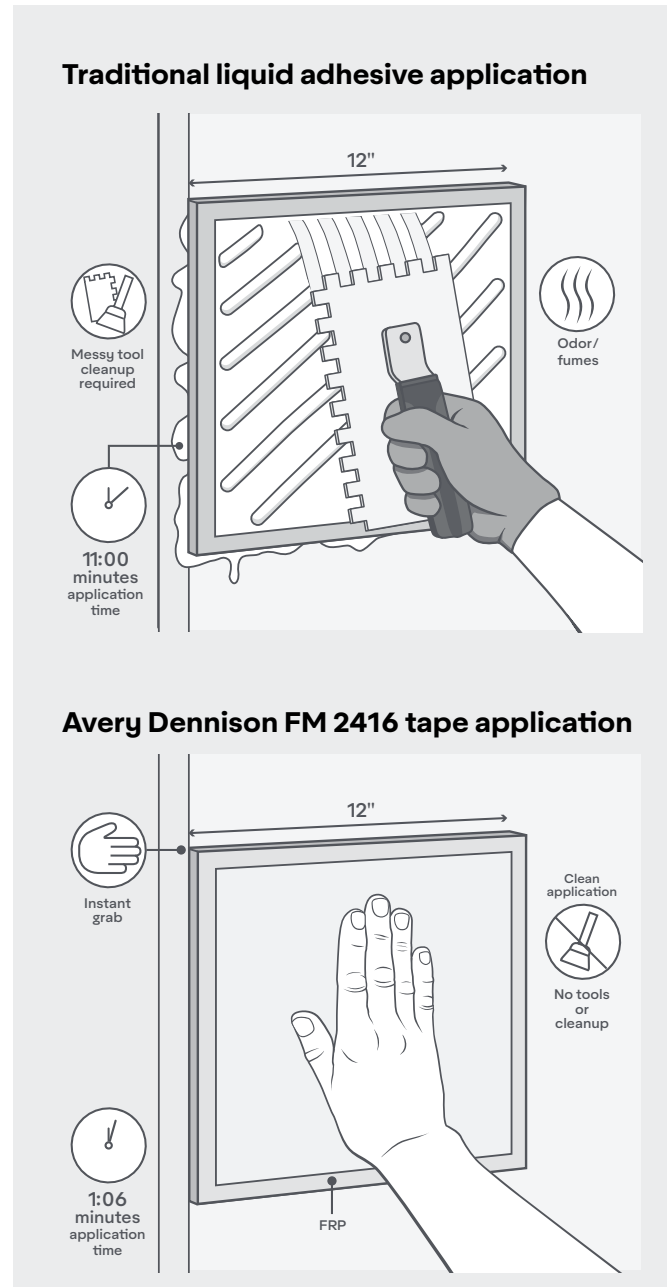
Analysis:

The traditional liquid adhesive application, including preparation of the glue, took an average of 11 minutes. The FM 2416 application averaged less than one minute — a remarkable labor savings.

Note FM 2416 does not produce excess glue, which greatly simplifies cleanup.

Conclusion:

Avery Dennison FM 2416 allowed panels to be installed 80% faster than liquid glues.



Cure time comparison: Which bonding solution minimizes delays for workers on-site?

Liquid glues typically require a minimum cure time of several hours or more. A skilled installer might trowel the glue onto a panel and set it in place in just minutes. But they may still have to wait overnight before the workspace can be accessed again for additional work. This delay can create labor bottlenecks.

PSA tapes, on the other hand, have a more linear workflow: an installer removes the panel from its packaging, peels off the protective liner and installs the panel. The adhesive cures immediately, allowing immediate access to the space for additional work.

Analysis:

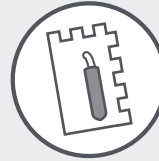
Referencing product instructions, this table compares the required cure times and environmental needs for the Liquid Nails, Titebond and Avery Dennison bonding materials.

	Liquid Nails FRP-310	Titebond Fast Grab	Avery Dennison FM 2416
Working time	45 minutes	20 minutes	Instant
Cure time	24 hours	24 hours	Instant
Minimum allowable temperature during cure	40°F	50°F	32°F
Substrate limitations	No painted surfaces	No non-porous materials to non-porous surfaces	None

Conclusion:

Using PSA tapes for bonding FRP to wall surfaces enables faster installation and immediate jobsite access, helping installers avoid labor bottlenecks while waiting for traditional adhesive cure times.

Traditional liquid adhesive bottleneck



Apply liquid
adhesive
(20 mins.)



Place RFP
(10 mins.)



Variable
open time
(30–60 mins.)



24-hour cure
required

FM 2416: Linear workflow



Tape comes
applied
(0 mins.)



Remove liner
(< 2 mins.)



Instant bond
and use

Green strength: Which bonding solution better withstands stresses immediately after application?

An active jobsite can be hazardous for an FRP. A panel may be accidentally (or purposely) brushed against, poked or pulled on. If the bonding solution lacks adequate “green strength” — an immediate bond that’s strong enough to resist these hazards — a panel may become skewed or dislodged, requiring rework to fix the issue.

Test:

For this test, conducted in the Avery Dennison laboratory, three FRPs were mounted to a sample of unfinished drywall with the three test products, following the manufacturer’s directions. A 5.27-pound steel plate was then attached immediately to each FRP.

- Titebond Fast Grab:
Failed immediately. The panel slid down the wall.
- Liquid Nails FRP-310:
Failed immediately. The panel slid down the wall.
- FM 2416:
The panel held the weight instantly with no creep whatsoever.

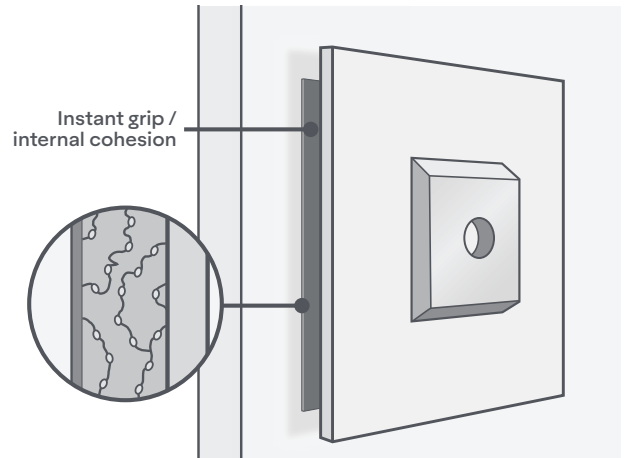
Analysis:

Liquid glues are lubricants in their uncured state. Because they’re water- or solvent-based, their molecules will slide past each other. This enables troweling and working time. But structural integrity only develops after moisture has evaporated from the product.

The PSA is a viscoelastic solid, so it doesn’t need to dry to provide a strong bond. Because the polymer chains in the adhesive are already linked, it creates green strength that can resist the pull of the plate.

Conclusion:

With its instant grip, Avery Dennison FM 2416 PSA is a strong choice for creating a bond that withstands jobsite hazards.



Long-term strength: Which bonding solution delivers greater strength after the cure cycle?

Once an FRP installation is complete and the manufacturer's cure time requirement has elapsed, it seems natural to assume additional work may begin in the space. This would include installation of items such as towel bars and décor.

Test:

FRPs were adhered to various substrates using each of the test adhesives. After the manufacturer-recommended cure cycle, each panel was forcibly removed.

For the purposes of this test, failure of either the substrate or the FRP (tearing or breaking apart under the stress) before the adhesive itself was considered a superior result. Easy removal of the FRP from the substrate was considered an inferior result.

Substrate	Liquid Nails FRP-310	Titebond Fast Grab	Avery Dennison FM 2416
Ceramic tile	Easy removal Glue at center of panel remained uncured	Easy removal Glue at center of panel remained uncured	FRP failure Tore tile off the wall; FRP panel broke before bond failed
Galvanized steel	Easy removal Glue at center remained uncured	Easy removal Glue at center of panel remained uncured	FRP failure Tore foam and FRP panel breakage
FRP	Easy removal Large uncured areas	Easy removal Large uncured surface areas	Solid anchorage Unable to pull apart panels; foam showed mechanical interlocking
Unfinished drywall	Substrate failure Full cure; tore drywall paper	Substrate failure Full cure; tore drywall paper	Substrate failure Tore drywall/slight paper tear
Painted drywall	Substrate failure Full cure; tore drywall paper/paint	Substrate failure Full cure; tore drywall paper/paint	Substrate failure Tore drywall/slight paper tear

Analysis:

For certain substrates, such as unfinished or painted drywall, the liquid glues provided a strong bond after the curing cycle was complete. However, for others, such as ceramic tile, the glue failed easily.

Avery Dennison FM 2416 performed consistently well across substrates. It provided a consistently strong bond for surfaces ranging from ceramic tile to drywall.

Conclusion:

Avery Dennison FM 2416 PSA delivers strong performance after the cure cycle is complete.

Harsh environments: Which bonding solution performs better in cold temperatures?

Especially in the northern states, contractors must occasionally contend with below-freezing temperatures. Bonding solutions that can continue to perform in such environments provide an advantage over those that do not.

Test:

To simulate a winter jobsite environment, all tested bonding materials were conditioned at 32°F for 24 hours.

Material	Result
Liquid Nails FRP-310	Froze solid and was unusable without thawing
Titebond Fast Grab	Significant consistency change (thickening), making troweling difficult and bond-line uniformity impossible
Avery Dennison FM 2416	No change in performance. The liner removed cleanly, and the tape maintained high tack and immediate adhesion at freezing temperatures.

Analysis and conclusion:

By maintaining its performance characteristics at below-freezing temperatures, Avery Dennison FM 2416 is an exceptional choice for bonding FRP in cold conditions.



Conclusion

FM 2416 PSA is an exceptional bonding choice for FRP

Compared to liquid adhesives, Avery Dennison FM 2416 offers faster application, immediate bond strength and better cold temperature performance. It's the superior choice for bonding FRP to a variety of substrates.

Learn more about Avery Dennison FM 2416 PSA and the many solutions we offer the building and construction industry at tapes.averydennison.com/buildingandconstruction.

To discuss ways to make your products even easier to use by integrating PSAs, please contact Luke Johnson, business development manager, at luke.johnson@averydennison.com.

Notes

1. Results of a 2025 survey by the Associated General Contractors of America. <https://www.agc.org/news/2025/08/28/construction-workforce-shortages-are-leading-cause-project-delays-immigration-enforcement-affects>

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