





Product Comparison Guide

FRP to Various Substrates with Adhesive Recommendation

	Titebond® GREENchoice™ Advanced Polymer Panel Adhesive	Titebond® GREENchoice™ Fast Grab FRP Adhesive	Titebond® Solvent-Based FRP Adhesive
Application Recommendations	<ul style="list-style-type: none"> • Porous and most non-porous substrates • Interior and exterior applications • Fiberglass faced, mold resistant and firecode core drywall, drywall, steel, foamboard, vinyl, PVC, FRP, ceramic tile, laminate, sealed and unsealed concrete 	<ul style="list-style-type: none"> • Porous substrates • Interior drywall applications • Non-treated plywood, greenboard, non-painted or unsealed concrete 	<ul style="list-style-type: none"> • Porous substrates • Interior and exterior applications • Fire rated and pressure treated plywood, drywall, traditional greenboard and unsealed cement
Cure Process	Cures as moisture penetrates the adhesive (reactive)	Dries as water leaves adhesive	Dries as solvents leave adhesive
Open Time	20 minutes	20 minutes	20 minutes
Application Temperature	50 - 90°F	50 - 90°F	50 - 90°F
Benefits	<ul style="list-style-type: none"> • Easy to trowel • Quick grab • VOC-compliant • Nonflammable • Mold & mildew resistant • Fast strength development 	<ul style="list-style-type: none"> • Quick grab formula - requires minimal bracing • VOC-compliant • Nonflammable • No offensive odor • Environmentally safe • Easy to trowel 	<ul style="list-style-type: none"> • Unaffected by moisture and high humidity • Easy to trowel • Will not become hard or brittle • Excellent wet out
Coverage	 <p>3/16" W x 1/4" D x 11/16" c-c V-notch Approximately 60 sq. ft. per gallon</p>  <p>3/16" W x 1/4" D x 1/2" c-c V-notch Approximately 50 sq. ft. per gallon</p>	 <p>3/16" W x 1/4" D x 1/2" c-c V-notch Approximately 50 sq. ft. per gallon</p>	 <p>3/16" W x 1/4" D x 1/2" c-c V-notch Approximately 50 sq. ft. per gallon</p>
Cleanup	It is important to clean-up adhesive immediately while still wet. To clean adhesive from panel, tools and hands while wet, use mineral spirits or isopropyl alcohol and a rag. Once adhesive has cured, it can be extremely difficult to remove. Follow solvent vendor's precautions. NOTE: Test solvent in an out-of-the-way area to make sure it will not mar or attack the surface.	Tools and excess adhesive may be cleaned with water or isopropyl alcohol while wet. If adhesive has dried, use mineral spirits. Follow solvent vendor's precautions when using solvents. NOTE: Test solvent in an out-of-the-way area to make sure it will not mar or attack the surface.	Scrape off dried excess with a putty knife. Remove residue with mineral spirits or equivalent solvent while the adhesive is still wet. Follow solvent vendor's precautions when using solvents. NOTE: Test solvent on an out-of-the-way area to make sure it will not affect the surface being cleaned.
Specifications	Meets GreenSeal GS-36, LEED, SCAQMD, CARB, NAHB Green Building specifications and NFPA Class A fire rated.	Meets GreenSeal GS-36, LEED, SCAQMD, CARB, NAHB Green Building specifications and NFPA Class A fire rated. FDA and Canadian Food Inspection Agency (CFIA) approved for indirect food contact.	N/A

FRP TO: ↓	Titebond® GREENchoice™ Advanced Polymer Panel Adhesive	Titebond® GREENchoice™ Fast Grab FRP Adhesive	Titebond® Solvent-Based FRP Adhesive
Standard unpainted drywall	Yes	Yes	Yes
Standard unpainted plywood	Yes	Yes	Yes
Treated plywood	Yes	No	Yes
Fire rated plywood	Yes	No	Yes
Cement board	Yes	Yes (will have longer drying time and FRP may have to be braced)	Yes
Fiberglass faced, mold resistant and firecode core drywall	Yes	No	Yes
DensGlass	Yes	No	No
FRP	Yes	No	No
Traditional Greenboard	Yes	Yes (will have longer drying time and FRP may have to be braced)	Yes
Ceramic tile	Yes	No	No
Stainless steel	Yes	No	No
Metal	Yes	No	No
Aluminum	Yes	No	No
Galvanized metal	Yes	No	No
Cement block (above grade or inside wall)	Yes	Yes (will have longer drying time and FRP may have to be braced)	Yes
Cement block (below grade or outside wall)	Yes	No	Yes
Painted walls (if paint is well anchored)	Yes	No	Yes (will have longer drying time and FRP may have to be braced)
Polystyrene foam	Yes	No	No
Polyurethane foam	Yes	No	No
Foil-faced insulation	Yes	No	No

FRP Installation Guide



- Trouble Shooting • Common Installation Errors
- Product Comparison Guide • Adhesive Recommendations

Trouble Shooting

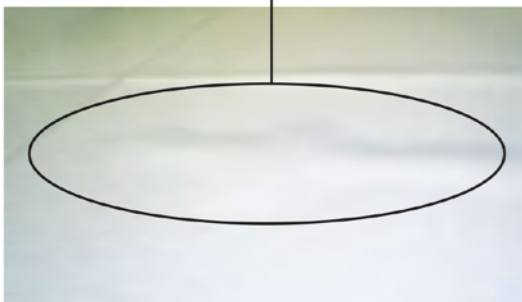
If you are experiencing bubbles or other weak bonding points on the FRP panels, reinstallation may be required. To help determine the cause of these problems and to prevent future recurrences, please review the following information below. If you cannot identify the cause of the problem, circle the affected area with a permanent marker and take photos before taking down the panel. Send samples of the affected area to the manufacturer along with samples of the adhesive and a lot number to have the issue analyzed by an expert.

Vertical & Horizontal Bubbles

- If there are long vertical bubbles down the middle, check right and left moldings for proper expansion space.

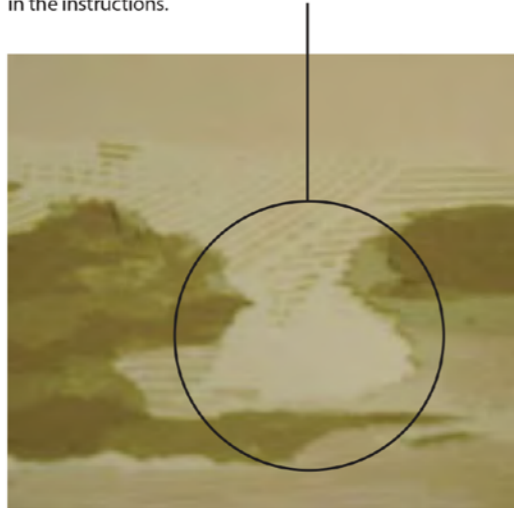


- If there are long horizontal bubbles, check the top and bottom moldings for proper expansion space.

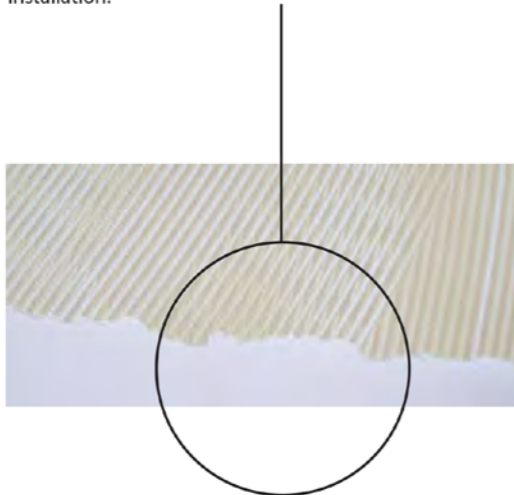


Incorrect Trowel Ridges

- Check trowel ridges and spacing to determine if correct trowel size was used and if trowel marks are on the panel. If there are bare spots or drag spots on the panel, then the adhesive was applied to the wall, not the panel as indicated in the instructions.

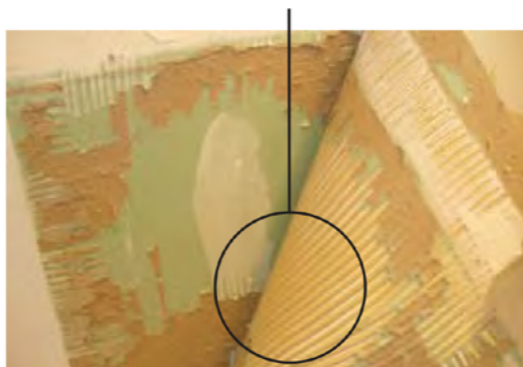


- Look for skips in the adhesive trowel pattern. Low trowel ridges (less than full depth) where the adhesive never made contact with the wall substrate could cause a failed installation.



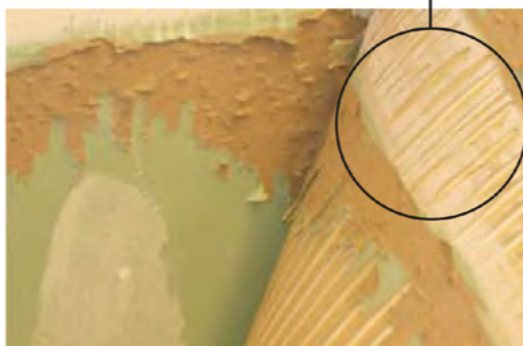
Undisturbed Ridges

- Check to see if there are normal undisturbed ridges that never reached the wall, where lack of pressure or extreme unevenness in the wall prevented a good bond between the wall substrate and the panel.



Flattened Beads

- A flattened bead on back of the panel with no adhesive transfer shows that the open time of the adhesive was exceeded and the panel was not applied to the wall substrate in time. Only one panel at a time should be troweled and immediately applied to the wall.



Loose Particles

- Check to see if loose particles (like drywall joint compound) are on the adhesive. If so, the substrate was not clean and adhesive bonded to only the loose particles.

FRP Installation Tips

- As a natural result of exposure to moisture and high heat conditions, a thin layer of cured adhesive may form on top of Titebond® GREENchoice™ Advanced Polymer Panel while in the pail. Discard layer before using adhesive.
- Trowel adhesive to the back of the panel - not the wall substrate.
- Check wall surface for irregularities that might deter adhesion: high/low spots, dirt, dust, oil, paint, excessive joint compound, etc.
- Acclimate panels to room temperature and lay panels flat for 24 hours before installation.

- Check to make sure the climate of the room, adhesive, panel and wall substrate are all above 50°F at least 24 hours before, during, and after installation. Avoid large temperature swings during the first 24 hours after installation.
- Use correct trowel size as recommended by the manufacturer.
- If there are long horizontal bubbles, check the top and bottom moldings for proper expansion space.

- Create oversized holes to allow for panel movement if any permanent fasteners are drilled through the panel, such as drop ceilings, cabinets, sinks and machinery.
- Press and roll entire panel against the wall substrate.
- Clean up adhesive with water while still wet*.

*Titebond Solvent - Based FRP Adhesive requires mineral spirits or equivalent solvent for cleanup.

Common Installation Errors

Preparing Wall Surface for Optimal Adhesion

- Make certain that the surface is clean and free of loose material that would affect adhesion, including excessive amounts of joint compound.
- The surface must be flat enough that adhesive beads will properly transfer from the FRP panel surface to the bonding surface.
- Concrete surfaces must be fully dried or cured so adhesive can properly dry (GREENchoice Fast Grab FRP Adhesive only).

Choosing an Appropriate Adhesive

Failure to choose the right adhesive could result in the adhesive not drying or curing.

- **DO NOT** use Titebond GREENchoice Fast Grab FRP Adhesive with fire rated or pressure treated plywood substrates. Only use Titebond Solvent-Based FRP Adhesive or Titebond Advanced Polymer Panel Adhesive.
- **DO NOT** use Titebond GREENchoice Fast Grab FRP Adhesive or Titebond Solvent-Based Adhesive for non-porous substrates. Only use Titebond Advanced Polymer Panel Adhesive.

Inappropriate Trowel Selection & Use

The inappropriate use of a trowel could result in incorrect trowel ridges and spacing, creating bare spots or drag spots on the back of the FRP panel.

- Depth of trowel notches needs to accommodate unevenness and bridges gaps between the wall surface and the installed FRP panel. The trowel notches will help accommodate wall imperfections.



- Size of bead produced affects adhesive working time. The smaller the bead, the less working time you have.
- Please refer to the comparison guide for exact trowel coverage.

Application of Adhesive

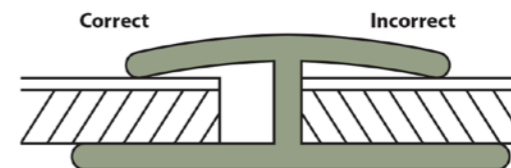
- **DO NOT** apply adhesive directly to the wall surface. Apply it to the FRP panel.
- **DO NOT** wait longer than the manufacturer's recommended open-time. Doing so could allow the adhesive to dry or cure and create weak bonding to the substrate.
- Be sure to spread the adhesive over the entire back of the panel using the recommended trowel.
- Keep trowel notches clean and free of adhesive build-up to insure proper application.
- After the adhesive is applied to the FRP panel, adhere the panel to the wall surface. Failure to adhere the panel to the wall surface within the recommended open-time will result in weak bonding or bubbles.
- Please refer to the open-time recommendations under the comparison guide.



Example of properly troweled adhesive application

Allowing for Expansion Space Around Panels

FRP changes dimension with temperature and grows as temperature increases.



FRP panels expand and contract due to fluctuating temperatures and humidity. Always allow for adequate space between and around the panel, allowing for proper expansion and contraction. Always refer to the panel manufacturer's spacing guidelines before the installation.

Restricting Free Expansion of the Panels

Recognize the need for oversized holes where pipes or conduits penetrate the wall. Failure to oversize any necessary holes through the panel could force the FRP panel to buckle or bubble.



- Avoid post installation additions, such as ceramic tile base directly over the FRP panel. Such additions restrict expansion space of the panel.

Properly Rolling or Pressing Entire Panel as it is Positioned

Use linoleum roller, J-roller or diligent hand pressure to adhere entire surface of the panel, ensuring good contact over the entire panel.

- Place panel against surface and press firmly over entire surface, working from the edge of the panel where molding is installed outward to the open edge.
- Adhesive needs to come in contact over the entire wall substrate. If not, the adhesive may not bond, creating bubbles.



- Apply Titebond WeatherMaster® Sealant or Titebond 100% Silicone Sealant around panels where edges are exposed, around oversized holes for pipes or conduits and along baseboard moldings where moisture can penetrate.
- Use grommetted heads and Titebond WeatherMaster Sealant or Titebond 100% Silicone Sealant where fasteners penetrate panel.