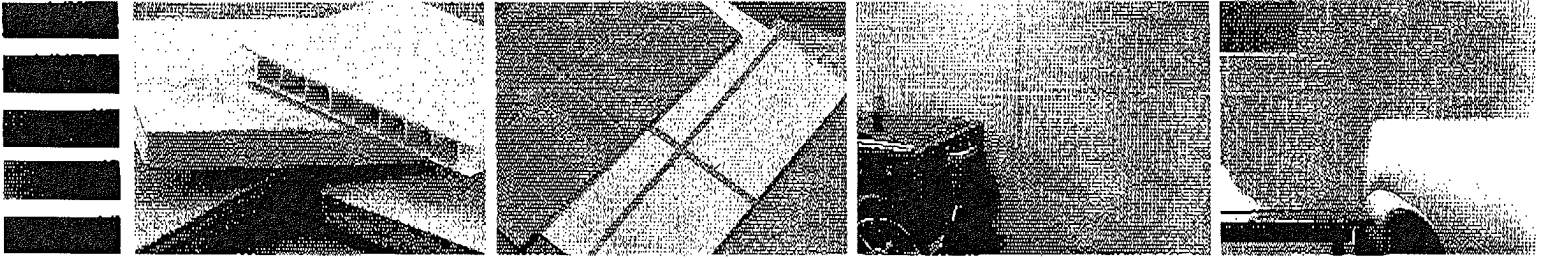




CRANE

Composites



Installation Guide For:

Standard FRP

Innovative Finishes FRP

Wall, Ceiling, and Laminated

Panel Installations



Safety Instructions

WHEN CUTTING OR DRILLING, ALWAYS WEAR PROTECTIVE GLASSES OR GOGGLES AND A FACE MASK WHICH COVERS THE FACE AND MOUTH. Itching due to glass fibers may be avoided by the use of barrier creams on exposed skin areas. Hearing protection is also recommended.

TOOLS NEEDED

- Circular saw with fine tooth carbide tipped saw blade
- Swivel-head 18 gauge shears (Figure 3, Page 4)
- Drywall Roto-Zip®
- Trowel with 5/16" x 3/16" x 1/4" "V" (Part #R50TROWEL) if using Titebond® adhesive, otherwise use trowel recommended by adhesive manufacturer
- Laminate roller (Part #R50ROLLER)
- Jig-Saw

MATERIALS NEEDED

- Standard FRP or Innovative Finish Panels
- Nylon Drive Rivets or Non-Corroding Fasteners (optional)
- Seam Finishing: choice of moldings or color matched caulk (caulk not provided by CCI)
- Silicone Sealant (for installation in high moisture areas)
- Soap and water for clean-up (Latex or Polymer adhesives)
- Mineral spirits for clean-up (Solvent-Based adhesives)
- Saw horses
- Plywood larger than panels
- Rags
- Sandpaper or PaperTiger® Wallpaper Removal Tool for roughing up wall
- Safety equipment (goggles & mask)
- Tape measure
- Utility knife
- Six-penny finishing nails
- Painter's tape
- Carbide tipped laminate cutter
 - FRP Latex-Based adhesive for standard drywall
 - Solvent-Based FRP adhesive or Advanced Polymer adhesive for moisture resistant or other non-porous substrate (Please contact Franklin Adhesive or other adhesive manufacturer for recommendations for adhesives to be used on substrates other than standard drywall. (Franklin Technical Support - 1.800.347.4583)

DISCLAIMERS (PLEASE READ)

PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION

These guidelines are provided in good faith to help prevent installation problems caused by common errors. The manufacturer and/or distributor of the product bears no responsibility for installation actions taken or not taken. There are many nuances of installation that are assumed to be general construction knowledge to an experienced installer; such nuances are not included in these instructions. Rather, these installation guidelines are strictly recommendations and are not intended to serve as a step-by-step, foolproof installation checklist. Selection of an experienced FRP installer is the sole responsibility of the project owner and architect. Crane Composites does not accept any responsibility for job failure resulting from or associated with improper job site environmental conditions.

FACTORY MUTUAL APPROVAL

The only FRP panel that is Factory Mutual Approved is Fire-X Glasbord® FM Class A by Crane Composites, Inc. To meet FM compliance, the panels must always be installed with mechanical fasteners and no adhesive. See FM report J.I. No. 282A2.AM dated 12/20/99.

STORAGE

Panels should be stored indoors on a solid, flat, dry surface. Do not stack on concrete floor or any other surface that emits moisture. Lay panels flat with proper support on the ends of panels. Do not stand panels on edge. Store all Standard and Innovative Finishes FRP panels inside. Optimum storage conditions are 60° to 75° (16°C to 24°C) and 35% to 55% relative humidity (Figure 1).

BEFORE INSTALLATION / PRE-CONDITIONING

Before beginning the installation, the installer must determine that the environment of the jobsite meets or exceeds all requirements specified in the installation guide. Prior to installing, remove the packaging and allow the panels to acclimate to the room temperature and humidity for 24 hours. Acclimation temperature range should be 60°F to 75°F (16°C to 24°C) and relative humidity should be 35% to 55%. Ideally, both the room temperature and humidity during acclimation and installation should be the same as the final operating conditions.

INSTALLATION CONDITIONS

Installation should not begin until building is enclosed (windows and doors are installed), permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete, or terrazzo work has dissipated. Installation temperature range should be 60°F to 75°F (16°C to 24°C) and relative humidity range should be 35% to 55%.

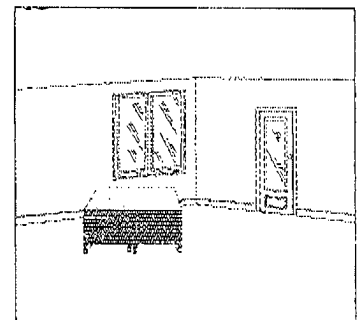


Figure 1

WALL PREPARATION

Walls should be flat and even. Remove high spots and fill in low spots prior to beginning installation. Remove wallpaper, soluble or loose paint, and other foreign matter that may interfere with the adhesive bond. The wall substrate must be dry and free from dirt, dust, and grease.

PAINTED OR PRIMED SURFACES

Painted surfaces will not allow solvent-free or solvent-based adhesives to dry. Consequently, they will not achieve full bond strength. Painted surfaces must be perforated with a Tiger Wallpaper Removal Tool to rough up the wall. If you do not have that available, surfaces must be gouged with a minimum 20 grit heavy sandpaper to break the moisture barrier of the paint. All loose paint, dirt and residue must be removed prior to installation.

NEW GYPSUM BOARD OR DRYWALL

New drywall should not be painted or primed. Tapered joints need only a fill and taped coating using a setting joint compound. A finish coat is not necessary or desirable. Any extremely uneven areas should be filled. Remove all drywall dust.

UNEVEN SURFACES

Installation over uneven surfaces will result in little or no adhesion to the wall substrate, therefore bubbling due to air pockets will form behind the panel. High and low spots should be leveled to provide an even wall surface.

PRE-INSTALLATION INSPECTION

Every attempt is made to inspect panels for cosmetic and physical abnormalities prior to shipment, however all panels should be inspected for any defects prior to installation. The installer assumes all responsibility for full inspection of product before installation. If panels are not acceptable, contact your Customer Care Account Specialist (CCAS) immediately. Do not install panels of unacceptable or questionable quality. Crane Composites, Inc. will not be responsible for installation or removal costs of unacceptable panels.

The following wall conditions require additional preparation or installation techniques:

Plywood

Plywood walls must be flat and even, and warped plywood should be removed and replaced. Solvent-Free adhesive cannot be used on any installation over pressure treated or fire-rated plywood.

Concrete Block and Brick

Concrete block and brick wall surfaces are by nature uneven, and FRP panels installed directly to these surfaces will likely develop loose spots, bulges and buckles. If a smooth buckle-free wall surface is required, the wall should be furred out with wood or metal studs or channels and covered with drywall or factory laminated panels. An alternate method is to install gypsum board, cement board or another appropriate substrate over the furring and then install FRP panels according to the standard installation instructions. If it is the owner or contractor's preference to install FRP panels directly to a concrete block or brick wall, it is recommended that the panels be installed with nylon drive rivets alone, without any adhesive. The rivet holes must be oversized and expansion joints provided. This will allow the panels to expand and contract under the rivet heads and will minimize but not eliminate buckles in the panels.

Non-Porous Surfaces

Non-porous surfaces (i.e., ceramic tile, glazed block, moisture resistant substrates, and metal panels) do not provide a good surface for adhesive bonding. General-purpose latex-based, polymer or solvent-based adhesives will not dry properly on a non-porous surface. Installation over this type of surface can be accomplished with rivets or you may contact an adhesive manufacturer for additional recommendations.

Direct Sunlight

Prolonged Direct Sunlight on panels may cause abnormal fading and/or rapid expansion depending upon amount of heat build up. Use caution in these areas.

The following special conditions require additional preparation or installation techniques:

High Humidity Rooms

Acclimate panels in the operating humidity conditions. Carefully follow the guidelines in this Installation guide for expansion/contraction spacing and sealing. (see Expansion Joint Chart, pg 5). Failure to seal moisture entry points with silicone sealant can cause swelling of the substrate resulting in warping, curling, delamination or bond line separation. Use an adhesive that is recommended for high humidity conditions. Follow the adhesive manufacturer's installation recommendations carefully. A vapor barrier (e.g. 6 mil poly sheet) may be required. Follow the architect or owner's specifications or check your local building codes for specific requirements.

Low Temperature Conditions

Acclimate panels in the operating temperature conditions. Carefully follow the guidelines in this Installation guide for expansion/contraction spacing and sealing (see Expansion Joint Chart, pg 5). Use an adhesive that is recommended for low temperature conditions. Follow the adhesive manufacturer's installation recommendations carefully. A vapor barrier (e.g., 6 mil poly sheet) may be required. Follow the architect or owner's specifications or check your local building codes for specific requirements.

Foam Insulation

An approved thermal barrier system (e.g., gypsum board) must be used between the FRP panels and any foam insulation (Figure 2). Check your local building codes for specific requirements.

Near Heat Source

FRP panels may discolor when installed behind or near a heat source which radiates temperatures exceeding 130°F (55°C), such as cookers, ovens, and deep fryers. Stainless steel is recommended for these types of areas.

Car Washes

See the last section in this installation guide for specific instructions.

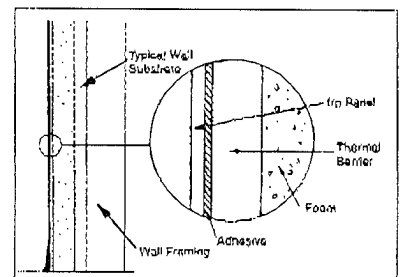


Figure 2

Pre-Installation Planning

- Pre-fit each panel before fastening and/or adhering in place.
- All cutting and drilling should be done prior to the application of adhesive.
- Preplan for cove or base molding. FRP panels should be installed so that the base molding will not restrict normal panel movement during expansion and contraction. Cut panels 1/4" short of where the base molding will extend; poured acrylic floor with built-in base cove should be in place prior to installation.
- When using rivets, pre-drill holes in the panels using a drill bit that is 1/4" larger than the rivet. Plan ahead so that fasteners will not interfere with moldings or other wall fixtures.
- When using mechanical fasteners through FRP to attach wall angles or other fixtures, pre-drill holes using a drill bit that is 1/4" larger than the mechanical fastener. Without oversizing the holes, the FRP will likely have bulges and/or buckles when panel movement occurs during expansion and contraction.

Basic FRP Installation Steps

1. Trim panel to fit. Oversize pilot holes if drop-in ceiling wall angle is attached to and through FRP (please allow for proper expansion and contraction)
2. Cut out any fixture openings.
3. Apply adhesive to 100% of the backside of panel using a cross-hatch pattern using a trowel recommended by the adhesive manufacturer.
4. Place panel on wall, leaving appropriate room at panel joints and corners for expansion and contraction.
5. Using a laminate roller, remove air pockets by rolling down and out toward the panel edge without a molding.
6. Fit appropriate moldings between panels and ends leaving a minimum of 1/8" for expansion between panel and molding stem.
7. Install next panel.

Without leaving required expansion/contraction room, FRP panels will likely have bulges and/or buckles when panel movement occurs during expansion/contraction

Cutting Instructions

POSITION PANEL FACE DOWN ON A COVERED WORK AREA

When cutting with a circular saw, position the panel so that the saw blade enters the front side of panel first to avoid chipping or damage. (Figure 3)

RADIUS CORNERS OF CUT-OUTS

Cut-Outs

The inside corners of all cut-outs must have a radius of at least 1/8" (3.2 mm). Failure to radius corners may result in stress cracking. For pilot holes, a 1/4" (6.36 mm) diameter router bit or drill bit may be used, use a jig saw to complete the radius cut out. Allow 1/8" (3.2 mm) clearance around all fixtures, electric boxes, piping, etc.

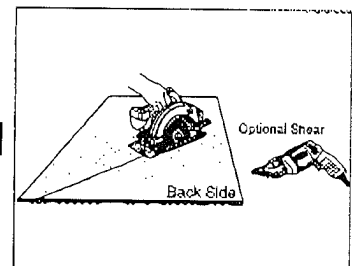


Figure 3

EXPANSION JOINT CHART

PANEL SIZE	4x8'	4x9'	4x10'	4x12'
Gap around rivets	1/8"	1/8"	3/16"	3/16"
Gap between panels and wall fixtures	1/8"	1/8"	1/4"	1/4"

Attaching to Wall

Generally, FRP panels can be installed using adhesive alone, fasteners alone, or a combination of adhesive and fasteners. The method used should be determined by the room and wall conditions (see the wall conditions noted on pages 4 & 5). Check your local building codes for any restrictions or guidelines regarding approved installation methods.

Before starting, determine which seam treatment is being used. Please refer to the appropriate instructions for the type of seam treatment being used.

- Moldings
- Color Coordinating Caulk (not available for purchase from Crane Composites)

If you are installing ceiling panels, factory laminated panels, car washes or using mechanical fasteners, please refer to the last section of this guide.

APPLYING ADHESIVE

When adhesive is used, be sure that it is an FRP-formulated product. FRP adhesives are widely available. Follow the adhesive manufacturer's recommendations for trowel style (e.g., appropriate height of adhesive bead left by trowel). It is important to apply adhesive carefully and follow all directions to prevent problems that may result from using too little or too much adhesive. 100% adhesive coverage applied to the entire back of the panel is recommended by using a "crosshatch" pattern. Adhesive should extend to all edges of the panel and should be applied directly to the back of each individual FRP panel. (Figure 4) Do not apply adhesive to wall.

SPACING

All FRP panels have expansion characteristics due to changes in humidity and temperature that must be accounted for during installation with proper spacing around panel edges and around fixtures attached to the panel/wall. Adequate space must be allowed for panel expansion and contraction. For a 4' x 8' panel, a minimum gap of 1/4" is required at the top and bottom of each panel and 1/8" between panels. More room will be required for longer panels. It is recommended that panels do not exceed 48" in width and 12' in length to aid in ease of installation and ensure a satisfactory finished installation. See the FRP panel Expansion Joint Chart for appropriate spacing at ceiling, floor and between panels. When a moisture resistant installation is required, Silicone sealant should be applied in all moldings around all panel edges, fastener, and fixtures.

MOLDINGS

One-piece moldings with expansion control guides or two-piece moldings are available for installation with standard FRP wall panels. Panels are inserted into the one-piece molding opening, while both parts of the two-piece molding are installed on top of the panel (Figure 5). Panels beneath the two-piece molding should maintain the recommended expansion spacing. Installations requiring additional abuse resistance should use the heavy-duty corners and batten strip.

Installation of panels over 12 feet long is not recommended.

EXPANSION JOINT CHART

PANEL SIZE	4x8'	4x9'	4x10'	4x12'
Gap at ceiling	1/4"	1/4"	3/8"	3/8"
Gap at floor	1/4"	1/4"	3/8"	3/8"
Gap between panel and center of 1 piece molding	1/8"	1/8"	3/16"	3/16"
Gap between panel and center of 2 piece molding	1/4"	1/4"	3/8"	3/8"
Gap between panel when not using molding *	1/4"	1/4"	3/8"	3/8"

* For tile-look decorative panels, use a six penny nail for joint spacing.

USING MOLDINGS

1. Start in an inside corner. Mark plumb line 48-1/8" (1.2 m) from corner. The first panel should be set true with a plumb line.

NOTE: If the panel is supplied with a protective tack film, leave film on during installation. Peel back tack film approximately 1/2" (12.7mm) for easy insertion into moldings. Remove film after installation.

2. Apply 100% adhesive coverage to the entire back side of the panel using a "crosshatch" type pattern. (Figure 4). Place panel against wall and align leading edge with plumb line.

NOTE: Failure to spread adhesive to the edge of the panel and failure to provide proper molding spacing may result in curling or bubbling as environmental conditions fluctuate.

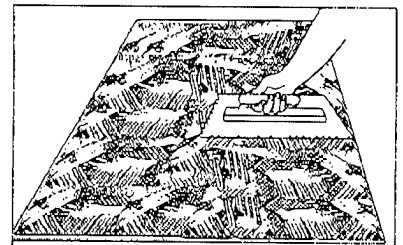
3. Insert a division bar on the first panel up to expansion control guide and continue installing panels. The free edge of the molding or division bar may be tacked in place if preferred before installing next panel.

4. Use a laminate roller to ensure all air pockets are removed between the panel and the wall and to ensure a good bond between the panel and the wall. Start in the top corner of the panel away from the leading edge. Begin rolling down and out towards the panel edge without a molding. (Figure 7)

NOTE: If using cap at the top or bottom of panel, slide it completely on to panel. When not using cap at top and bottom, leave 1/4" (3.2 mm) gap for expansion. If a moisture resistant installation is required, Silicone sealant should be applied in all moldings and around all panel edges, fasteners and fixtures.

5. Install the last panel on the first wall as stated above, but with no corner molding on the leading edge. The first panel on the new wall will receive a corner molding, thus completing the corner transition.

6. Slide the next panel into the division bar. Repeat process working in one direction around the room.



Apply adhesive to edge of panel holding trowel at a 46° angle.

Figure 4

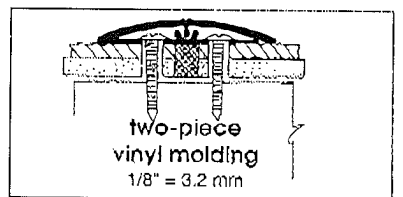


Figure 5

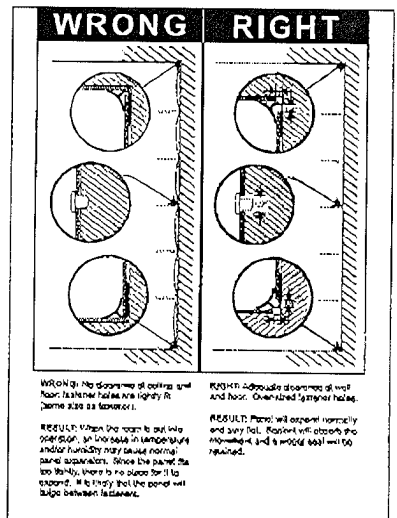


Figure 6

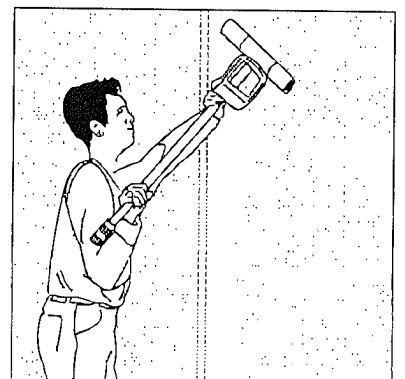


Figure 7

IMPORTANT—NOTES REGARDING TILE LOOK PANEL INSTALLATION

1. For proper alignment of the horizontal score lines, create a level line from the highest area of the floor.
2. Plan your panel layout so that the seams of the panels are not directly over the seams of the substrate. Avoid positioning joints close to inside or outside corners.
3. Keep tack film on during installation to protect the panels—peel back approximately 1/2" for easy installation into trims.

USING COLOR COORDINATING CAULK (Caulk not available for purchase from Crane Composites)

1. Start in an inside corner. Mark plumb line 48" (1.2 m) from corner. The first panel should be set true with a plumb line.

NOTE: If panel is supplied with a protective tack film, leave film on during installation.

2. Apply 100% adhesive coverage to the entire back side of the panel using a "crosshatch" type pattern. Place panel against wall and align leading edge with plumb line. Use caution so that adhesive does not seep into the gap between the panels.*

NOTE: Failure to spread adhesive to the edge of the panel may result in curling of panel edges and bubbling as environmental conditions fluctuate.

3. Use a laminate roller to ensure all air pockets are removed between the panel and the wall and to ensure a good bond between the panel and the wall. Start in the top corner of the panel away from the leading edge. Begin rolling down and out towards the leading panel edge. (Figure 7)
 4. Hammer six-penny finishing nails against the panel leading edge two feet on center. This will maintain proper spacing between panels. **Leave nails in place until adhesive sets up (per manufacturer's instructions) and then remove.
 5. Prepare the joints for caulking.
 - If panel has tack film, leave in place.
 - If panel does not have tack film, place painter's tape on each side of the seams that are to receive caulk.
 6. Fill the 1/8" (3.2 mm) gap between the panels with caulk, making sure that the gap is completely filled. Push tube in the direction of travel. Wet your finger and smooth bead if necessary.
 7. After smoothing bead, allow caulk to dry before removing tack film or painter's tape.
- ** If using a cap at the top or bottom of panel, slide it completely on to the panel. When not using a cap at the top or bottom, leave 1/4" (3.2mm) gap for expansion.
- ** If a moisture resistant installation is required, Silicone sealant should be applied in all moldings and around all panel edges, fasteners and fixtures.

USES OF FASTENERS

Nylon drive rivets, or corrosion resistant screws are appropriate fastener options. If rivets or fasteners are used, panels should be predrilled using a drill bit that is 1/8" to 1/4" larger than the fastener. During installation, holes only slightly larger than the fastener should be drilled into the substrate through the pre-drilled holes in the panel and prior to any adhesive application (Figure 8). Apply silicone sealant prior to inserting rivets or fasteners.

The recommended fastening frequency is 16" on center both horizontally and vertically. Space perimeter holes at least 1" to 1-1/2" from panel edge when using one piece moldings and stagger holes of abutting panels. When using two piece moldings put perimeter holes 1-1/2" to 2" away from panel edge (Figure 8, Figure 9).

PANEL INSTALLATION FINISHING

- Adhesive residue may make panels appear stained and will collect dirt. Clean panels thoroughly prior to leaving the jobsite.
- Remove any adhesive residue upon completion of the job. To remove latex-based adhesive, clean with a non-abrasive cotton cloth and warm water. If necessary, use a mild, non-abrasive detergent. For best results, change water and cleaning rags frequently. For clean-up with solvent based adhesives, use mineral spirits or acetone to remove residue (Figure 10).

NOTE: SOLVENT-BASED OR ABRASIVE CLEANERS SHOULD NOT BE USED ON DESIGNS PANELS OR PATTERN MATCHED MOLDINGS

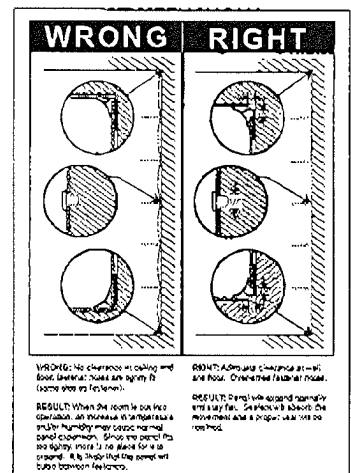


Figure 8

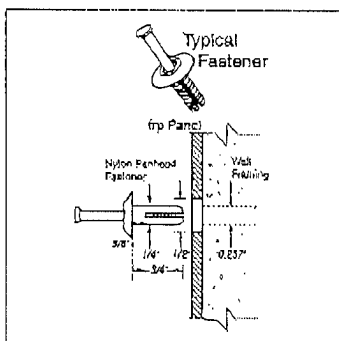


Figure 9

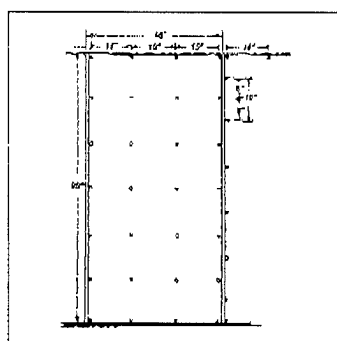


Figure 10

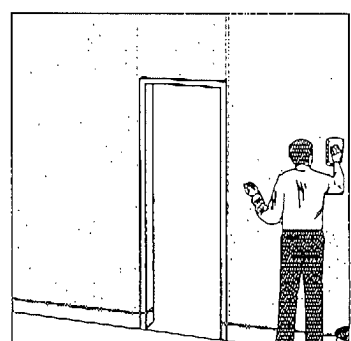


Figure 11

Ceiling Panel Installation

LAY-IN CEILINGS

For lay-in ceiling grid systems, in order to avoid unacceptable deflection, purchase factory pre-cut ceiling panels. Wall panels may be more flexible than ceiling panels and should not be cut into ceiling panel sizes (2' x 2' or 2' x 4') at the jobsite. To install ceiling panels, lay into ceiling grid. Trim as necessary to accommodate lighting or other fixtures.

Always leave a 1/8" gap between panel and grid or fixture to allow for normal panel expansion and contraction. FRP grid systems may require specially sized ceiling panels. See the FRP grid system installation guide. Do not attach ceiling grid through top of panels.

GLUE-UP CEILINGS

To glue up and rivet full-size panels to a solid ceiling substrate, follow the instructions for wall panel installation. To ease handling, panel size should be limited to 4' x 8'. Mechanical fasteners must be used on ceiling installations.

WHEN USING FRP PANELS IN A CEILING GRID

In order to minimize gaps between the panel and the grid system, Crane Composites strongly recommends FRP ceiling panels be used with butt-end ceiling grid systems. Smooth FRP panels will highlight the space between the grid and a flush mount ceiling panel. Crane Composites is not responsible for space between panel and grid when overlay grid systems are used. For optimal results use Sanigrid II - Fiberglass Ceiling Grid System.

Car Wash Installation

Using FRP panels that have been factory laminated to fluted polypropylene is the ideal solution for lining the interior walls of a car wash, with its high moisture environment. The expansion and contraction due to thermal changes and extended exposure to moisture can, however, cause any FRP panel product to expand.

Bulging from expansion can be minimized if panels are installed properly. The key to a satisfactory installation in such a high moisture environment is to provide adequate clearance around fasteners, moldings, pipes, and junctures so the panels are free to expand and contract. As little as 1/64" change in length can cause bulging if there is no clearance for a panel to expand. **NOTE: Bulging of panels in a car wash installation is not cause to consider the panels defective.** In general, follow the wall panel installation instructions within this guide.

Additionally, the following guidelines will aid in completing a satisfactory high moisture installation.

1. Limit panel length to 8'.
2. Install panels vertically.
3. Acclimate panels to the ambient temperature and moisture conditions for a minimum of 48 hours prior to installation.
4. Install panels leaving a minimum of 1" space at both the floor and ceiling junctures.
5. Use mechanical fasteners (metal or nylon drive rivets). Always oversize the fastener holes. Do not use adhesive.
6. Install wall-hung equipment and signs with standoffs (washers) between the substrate wall and equipment, making certain that the standoffs are thick enough to expand and contract. Drill panels 1/4" diameter larger than the standoffs (Figure 11).
7. Caulk and seal all edges to keep water from getting behind the panels (Figure 11).

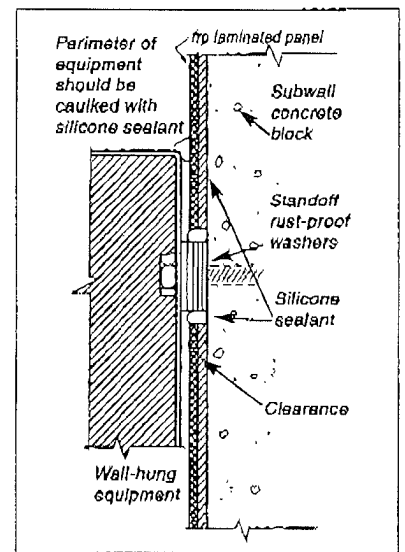


Figure 11

Factory Laminated Panel Installation

Laminated panels may be installed following the FRP panel installation instructions. Laminated panels are commonly installed directly over a steel or wood studded wall. Stud spacing is recommended to be 16" or less on center. Stud spacing should be planned so that panel edges will occur on stud centers. Laminated panels should not be installed over C-Channel aluminum studs, as the aluminum may not be strong enough to resist any movement in the paneling should expansion or contraction occur.

- Use the same spacing guide for panels and fasteners as listed in FRP panel installation recommendations.
- Laminated panels may be installed without a division bar molding, but maintain a 1/8" space between panels. This space allows for normal expansion and should be filled with silicone sealant to completely seal the installation from moisture (Figure 12).
- Always seal around any moldings, fixtures or fasteners to provide a moisture resistant installation.
- Laminated panels may be fastened with non-corroding nails or screws directly to wood or steel studs (minimum 25 GA.) or with nylon drive rivets to drywall, plaster, or concrete block. Install fasteners no further than 8" apart around outside edges and 12" apart on intermediate 16" centers.
- Put perimeter fastener holes 1/2" to 2" from panel edge depending upon width of molding being used.
- Fastener holes in the panel should be predrilled 1/8" larger than rivets.
- One-piece molding is available for use with standard 9/32" OSB laminated panels.
- Two-piece molding or heavy-duty batten strip and corners are available for non-standard thicknesses (Figure 5). See your FRP panel distributor for availability.
- Silicone sealant should be applied in all moldings and around all panel edges, fasteners, and fixtures to provide moisture resistant installation.
- When bonding fluted polypropylene laminated panels to steel studs, or non-porous surfaces, use 3M™ VHB™ (very high bond) tape. Contact 3M for correct VHB tape.

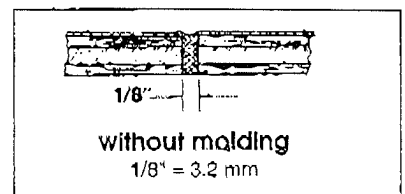


Figure 12

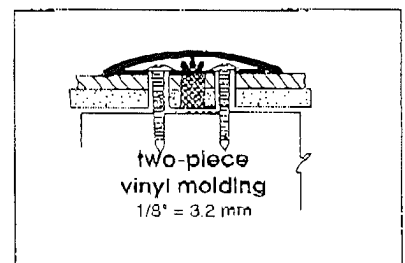


Figure 5

AN IMPORTANT NOTE ABOUT MOISTURE RESISTANT SUBSTRATES

AN IMPORTANT NOTE ABOUT MOISTURE RESISTANT SUBSTRATES

MOISTURE-RESISTANT GYPSUM VARIES TREMENDOUSLY, WHILE SOME OF THESE NEW SURFACES ALLOW MOISTURE TO PENETRATE, OTHERS RETARD OR TOTALLY PREVENT PENETRATION OF WATER OR SOLVENT. TESTING BY CRANE COMPOSITES INDICATED THAT WHEN WATER BASED OR SOLVENT BASED FRP ADHESIVES ARE USED IN CONJUNCTION WITH MOISTURE RESISTANT GYPSUM THE ADHESIVE ABILITY TO CURE IS SEVERELY COMPROMISED IN THE CRUCIAL FIRST 24 HOURS OF INSTALLATION AND THE POTENTIAL FOR A SUCCESSFUL INSTALLATION IS GREATLY DIMINISHED. FRANKLIN INTERNATIONAL AND THE CONSTRUCTION TRADE ARE BECOMING EXPOSED TO AN INCREASINGLY LARGE NUMBER OF NEW TYPES OF MOISTURE RESISTANT GYPSUM FROM THE DRYWALL INDUSTRY. GIVEN THESE TWO FACTS, IT IS RECOMMENDED THAT FRANKLIN INTERNATIONAL'S TECHNICAL SUPPORT DEPARTMENT BE CONSULTED PRIOR TO ANY FRP INSTALLATION OVER WALL SUBSTRATES OTHER THAN STANDARD GYPSUM.

STANDARD GYPSUM IS CRANE COMPOSITES PREFERRED SUBSTRATE CHOICE WHEN INSTALLING FRP WALL PANELS. FRP OFFERS RESISTANCE TO MOLD, MILDEW, AND BACTERIA GROWTH AND HAS A HIGH IMPACT STRENGTH, HIGH MOISTURE RESISTANCE, CHEMICAL RESISTANCE AND STAIN RESISTANCE.

A MOISTURE RESISTANT SUBSTRATE MAY NOT BE NECESSARY WHEN AN FRP FINISH IS SPECIFIED. HOWEVER, SHOULD A MOISTURE-RESISTANT GYPSUM BE REQUIRED PLEASE CONTACT EITHER FRANKLIN OR ANOTHER ADHESIVE SUPPLIER TO REVIEW THE PROPOSED SUBSTRATE AND OBTAIN A RECOMMENDATION ON APPROPRIATE ADHESIVE FOR THAT TYPE OF SUBSTRATE SURFACE PRIOR TO INSTALLATION.

CRANE COMPOSITES WILL NOT BE RESPONSIBLE FOR FAILED INSTALLATIONS DUE TO LACK OF ADHESIVE BOND STRENGTH BETWEEN THE ADHESIVE AND THE SUBSTRATE.

PLEASE DO NOT HESITATE TO CONTACT:

CRANE COMPOSITES CUSTOMER CARE

1.800.435.0080

OR

DALE ZIMMERMAN, FRANKLIN TECHNICAL SUPPORT

800.347.4583 | DALEZIMMERMAN@FRANKLININTERNATIONAL.COM

GLASBORD LAMINATED PANELS (KEMPLY)

Glasbord Laminated panels (Kempli) have not been tested for physical properties or fire resistance. All Glasbord finishes have been tested for surface burning characteristics (see Technical Bulletins 6226, 6229, 6296, 7901 and 65020). Physical properties and fire resistance data on the substrate are available from the specific substrate manufacturer. Crane Composites makes no representation or warranty as to the composite panel fitness for any specific application, overall physical properties, fire resistance, or burning characteristics. The intended use of laminated panels that use fluted polypropylene as a substrate, is to line the walls or ceilings of car washes and agricultural buildings. Installation of these panels in any application should be approved by the local building code official before panels are ordered. Crane Composites cannot ensure code compliance in all situations.

FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS

The numerical flame spread and smoke development ratings are not intended to reflect alleged hazards presented by Crane Composites products under actual fire conditions and this product has not been tested by Crane Composites except as set forth below. These ratings are determined by small-scale tests conducted by Underwriters Laboratories and other independent testing facilities using the American Society for Testing and Materials E-84 test standard (commonly referred to as the "Tunnel Test").

CRANE COMPOSITES PROVIDES THESE RATINGS FOR MATERIAL COMPARISON PURPOSES ONLY. Like other organic building materials (e.g. wood), panels made of fiberglass reinforced plastic resins will burn. When ignited, FRP may produce dense smoke very rapidly. All smoke is toxic. Fire safety requires proper design of facilities and fire suppression systems, as well as precautions during construction and occupancy. Local codes, insurance requirements and any special needs of the product user will determine the correct fire-rated interior finish and fire suppression system necessary for a specific installation. We believe all information given is accurate, without a guarantee. Since conditions of use are beyond our control, all risks are assumed by the user. Nothing herein shall be construed as a recommendation for uses which infringe on valid patents or as extending a license under valid patents. www.astm.org/Standards/E84.htm.

We believe all information given is accurate. It is offered in good faith, but without guarantee. Since conditions of use are beyond our control, all risks are assumed by the user. Nothing herein shall be construed as a recommendation for uses which infringe on valid patents or as extending a license under valid patents.

Crane Composites, Kemlite, Glasbord, Fire-X Glasbord, Surfaseal, Sanigril, Kempli and Translucent Plastic Thread with Fluorescent Pigment Design are Registered Trademarks of Crane Composites, Inc.

The GREENGUARD Indoor Air Quality Certified Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute.

PaperTiger is a registered trademark of PaperTiger Ltd., Roto-Zip is a registered trademark of RotoZip Tool Corporation, Titebond is a trademark of Franklin International, 3M and VHB are trademarks of 3M Company.

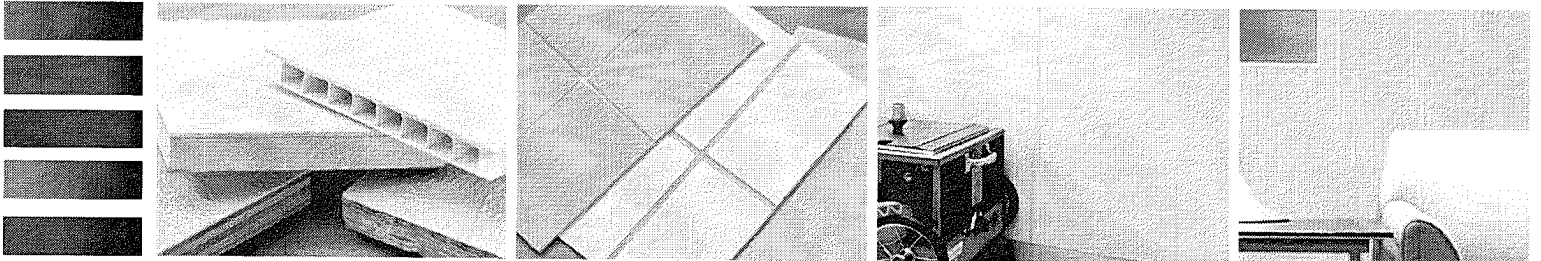
Form #6876 Rev. 04 (5/28) 7.11

www.FRP.com | 1.800.435.0080 | 1.815.467.8666 (fax) | salesbp@cranecomposites.com

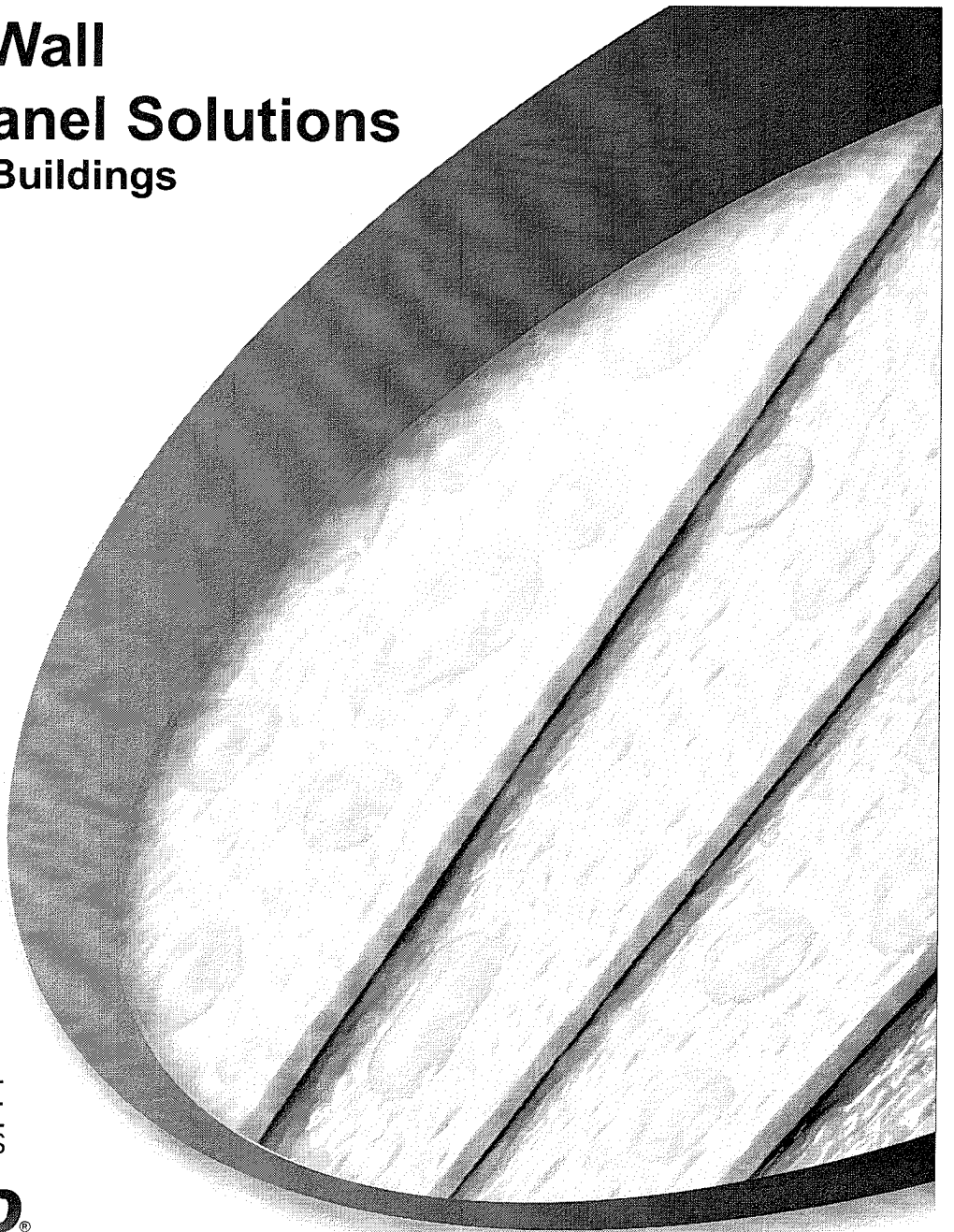


CRANE Composites

Crane Composites is the manufacturer of Glasbord, Sequentia, Sanigril II and a variety of other fiberglass reinforced plastic (FRP) composite wall panels. Inspired by the Kemlite tradition, Crane Composites has over 55 years of experience in commercial building products and is a recognized industry leader in FRP applications.



Innovative Wall & Ceiling Panel Solutions for Commercial Buildings

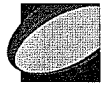


INNOVATIVE
Performance • Texture • Style finishes

GLASBORD®

WHERE TRADITION & INNOVATION CONVERGE





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Where Tradition & Innovation Converge

The tradition of Kemlite provides a solid foundation for the service and quality our organization provides the customer. The resources of Crane Composites allows our company to improve our operations and our products every day. The end result is quality FRP products your customers and projects demand, backed by the service and support you deserve.

Manufactured in the USA

Crane Composites, Inc., a Crane Co. (NYSE:CR) company, certifies that FRP panels sold under the names of Innovative Finishes and Glasbord are domestic end products, manufactured or produced in the United States.

Our Parent Company | Crane Co. (NYSE:CR)

Founded in 1855 by Richard Teller Crane, Crane Co. is composed of 26 businesses in six industry segments including: Fluid Handling, Electronics, Merchandising Systems, Engineered Materials, Controls and Aerospace.
www.craneco.com

Manufacturing Plants

The bulk of our building products are manufactured at facilities in **Joliet, Illinois** and **Florence, Kentucky**. Crane Composites has additional manufacturing facilities in Jonesboro, Arkansas, Goshen, Indiana and Alton, England.

GREENGUARD® Certification

The complete line of FRP wall and ceiling panels manufactured by Crane Composites, Inc. has earned GREENGUARD Children & Schools and GREENGUARD Indoor Air Quality Certification. These certifications are issued by the GREENGUARD Environmental Institute (GEI). As a leading manufacturer of fiberglass reinforced plastic panels, Crane Composites has progressively improved the quality of their products while increasing the use of low emitting materials. The GREENGUARD Certification provides confirmation that efforts have been successful.



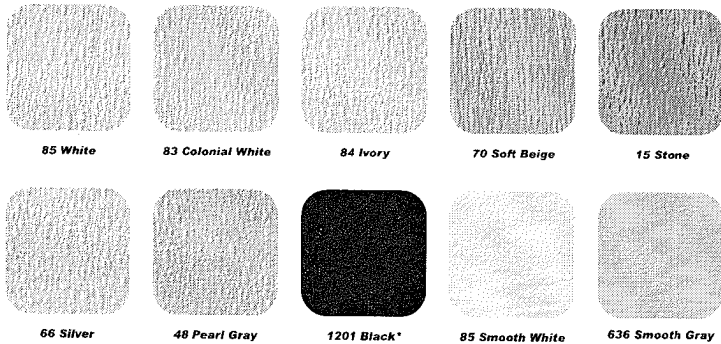
Crane Composites Cares About the Environment

- State of the art Regenerative Thermal Oxidizers (RTO) are utilized to eliminate the emission of VOC's (Volatile Organic Compounds), making CCI manufacturing facilities Title V (air permit) Compliant
- Materials used in packaging are recyclable – plastics, wood, cardboard and aluminum pallets and cores are returned from customers and reused
- Less than A-grade quality product is saved and reworked or sold as B-grade to avoid landfill
- Water used to cut product on the continuous manufacturing line is reused in a closed loop system and does not introduce contaminated H2O into the waste system
- Formaldehyde free products and processes
- Rags and acetone cleaners are recycled
- All products made with non-lead based pigments
- Carrier film is reused
- Office paper is recycled as well as printer ink and toner cartridges
- Buildings are non-smoking facilities with designated smoke areas
- Crane Composites complies with all local, state and federal regulations regarding pollution prevention of land, water and air and we are focused on waste minimization in all areas



GLASBORD®

Premium Wall & Ceiling Panels



Since 1954 **GLASBORD** protected by Surfaseal has been the industry standard for FRP wall and ceiling panels. Surfaseal provides extra protection against mold, mildew and stains.

Durable, cleanable, easy to install **GLASBORD** is the panel your project demands backed by the service you deserve.

Applications

Commercial Kitchens
Restaurants
Restrooms
Convenience Stores
Locker Rooms
Food Processing Plants

Product Specs

Available Sizes
4' x 8' | 4' x 10' | 4' x 12'

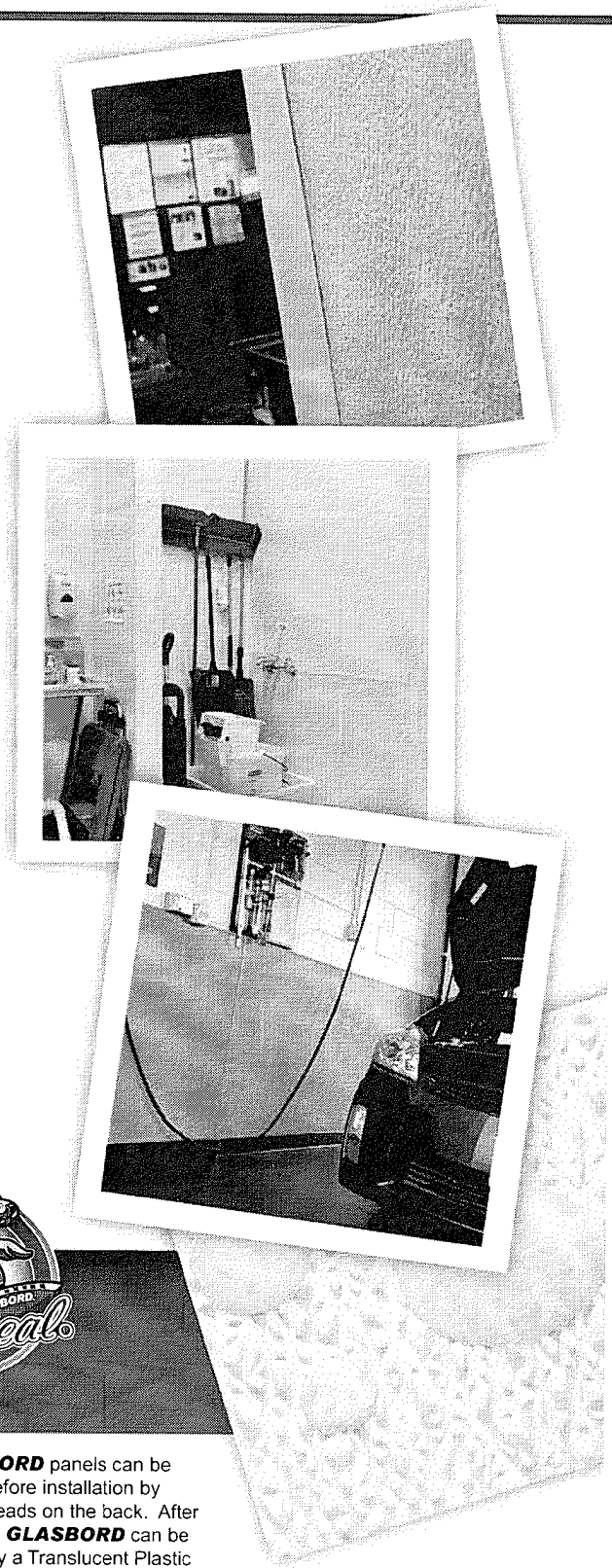
Thickness
0.09"
0.75" (Smooth)

Features

Mold and Mildew Resistant
Available as FM Approved
Meets USDA/FSIS Requirements
Easy To Install
Cleanable
Durable

Fire Rating

Class A or Class C
per ASTM E-84
CAN/ULC-S102



Surfaseal is a protective finish that makes **GLASBORD** easier to clean and up 6 times more stain resistant than other FRP panels. This unique finish ensures **GLASBORD** wall and ceiling panels will stand up to harsh conditions while maintaining a clean and sanitary surface.

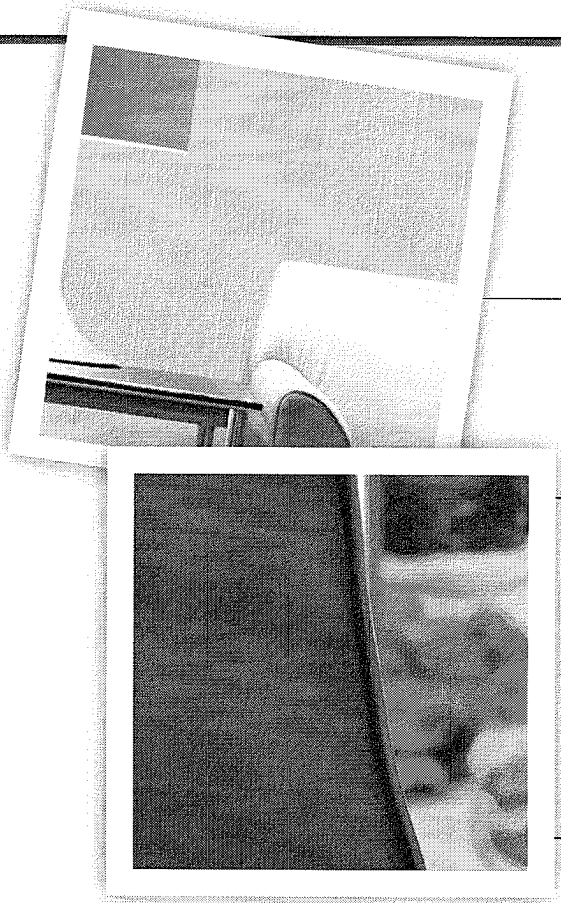


Fire-X **GLASBORD** FM is the only fiberglass reinforced interior wall panel that is accepted under Factory Mutual Research Approved FRP, Class 1 Interior Finish Material in accordance with Factory Mutual Research Approval Standard 4880.



Only **GLASBORD** panels can be identified before installation by colored threads on the back. After installation, **GLASBORD** can be identified by a Translucent Plastic Thread with Fluorescent Pigment Design® embedded in the front of the panel and visible by black fluorescent lighting.

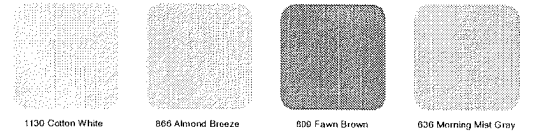
LINEN, SANDSTONE, BEADED, TILE-LOOK



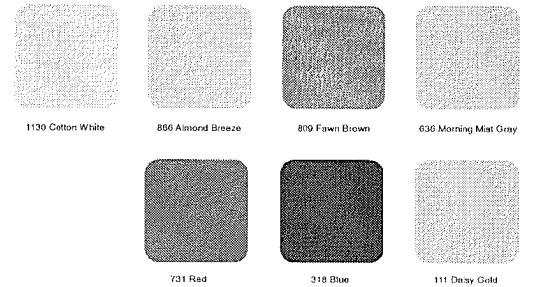
Wall Panels With Style

The Innovative Finishes line combines the traditional benefits of fiberglass reinforced plastic with linen and sandstone textures and tile-look and beaded finishes to provide a panel with presence and style that performs.

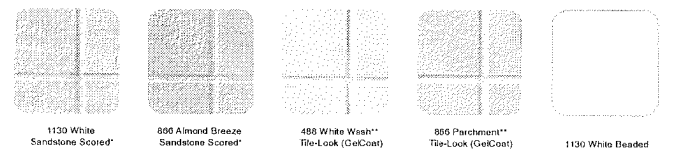
Linen Textures



Sandstone Textures



Tile-Look & Beaded



Applications

- School Hallways
- Cafeterias
- Dining Rooms
- Reception Areas
- Health Clubs
- Assisted Living Centers

Features

- Mold & Mildew Resistant
- Variety of Textures
- Easy To Install
- Cleanable
- Durable

Product Specs

Available Sizes
4' x 8' | 4' x 10'

Finish	Thickness	Fire-Rating (per ASTM E-85)
Linen	0.09"	Class A & Class C
Sandstone	0.09"	Class A & Class C
Tile-Look	0.09"	Class C
Beaded	0.075"	Class C

Moldings & Seam Treatments

Silhouette Trims

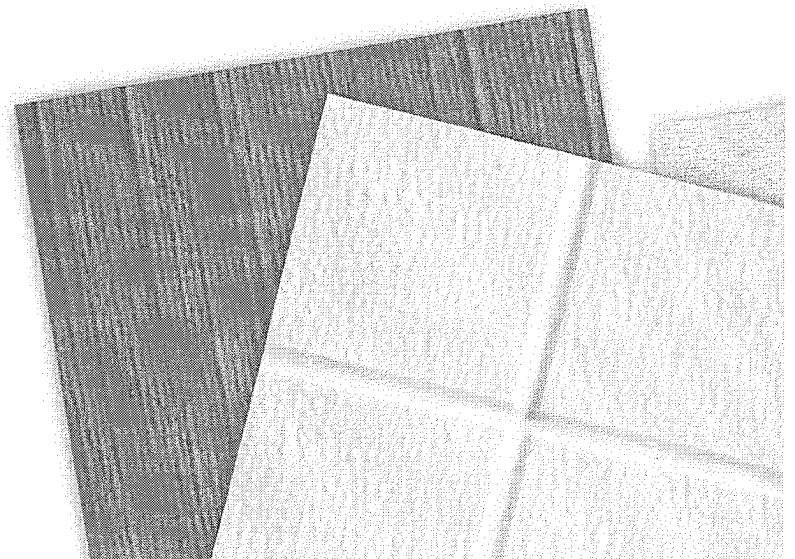
Silhouette Trims offer a narrow profile to minimize the seam. Available in five colors to match the Innovative Finishes product offering.

Silicone Caulk

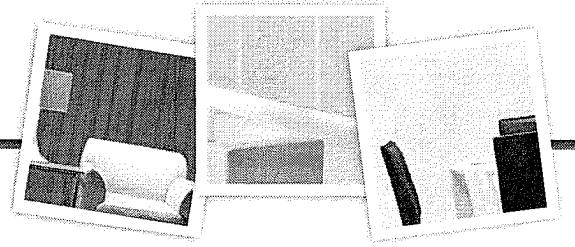
White or almond silicone caulk provides a low profile, aesthetically pleasing look to match the score lines of the Gel Coat, tile-look panels.

*Sandstone Scored Panels are also available in Fawn Brown and Morning Mist Gray Available in 10' only
All sandstone panels may be scored in 2", 3", 4", 6", 8", and 12" squares

**Gel Coat White Wash and Parchment are available in an unscored panel, Gel Coat Scored panels are scored in standard 4" x 4" squares. Gel Coat panels are only available in Class C per ASTM E-84



DESIGNS & PATTERN MATCHED MOLDINGS



DESIGNS

The newest FRP wall panels from Crane Composites combine the traditional benefits of fiberglass reinforced plastic with innovative and attractive patterns. DESIGNS FRP wall panels have style, perform like FRP and are available with pattern matched moldings for seamless and moisture resistant installations.

DESIGNS 4U

Your custom designs, logos or images can now be transformed into a durable, cleanable and easy to install FRP wall panel. Custom moldings are available for seamless and moisture resistant installations.

Applications

School Hallways
Cafeterias
Dining Rooms
Reception Areas
Health Clubs
Hospitals
Lobbies

Features

Mold & Mildew Resistant
Pattern Matched Moldings
Easy To Install
Cleanable
Durable

Product Specs

Available Sizes
4' x 8' | 4' x 10'

Texture
Smooth

Thickness
0.075"

Fire-Rating
Class A or C
per ASTM-E84

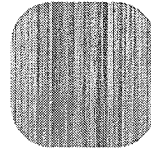
Industries

Education
Health Care
Hospitality & Casino
Fitness
Retail
Restaurants

Available DESIGNS Pattern Options



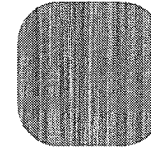
Tennessee Timber



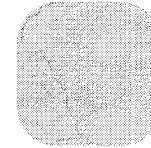
Carolina Cherry



Baton Rouge Bamboo



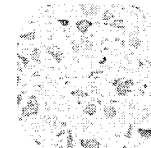
Washington Wood



Sculptured Stone



Scattered Stone



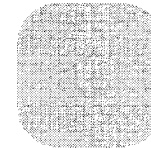
True Terazzo



Maui Marble



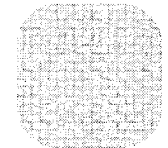
Camel Canvas



Western Weave



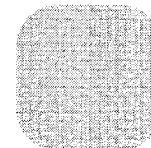
Corn Silk Canvas



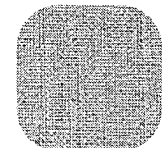
Winter Weave



Chrome Canvas



Willow Weave



Coastal Canvas



Whipped Weave



Colonial Canvas



Washed Weave



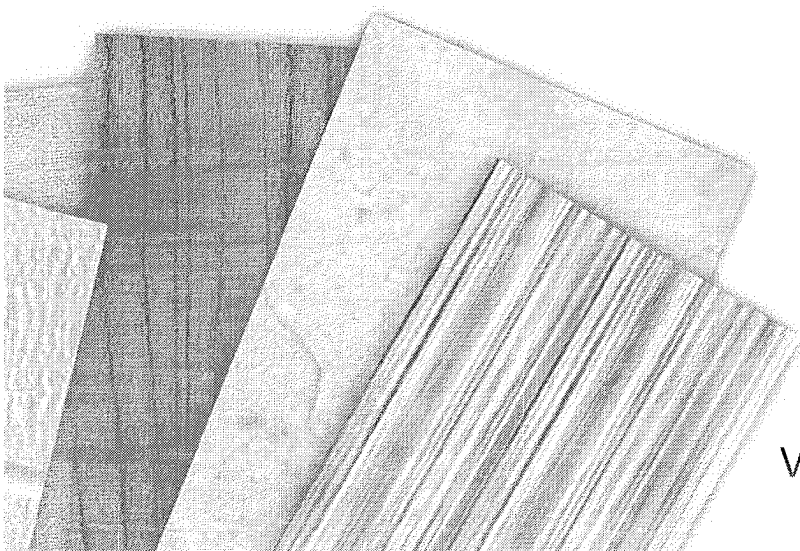
DESIGNS 4U



Watered Weave



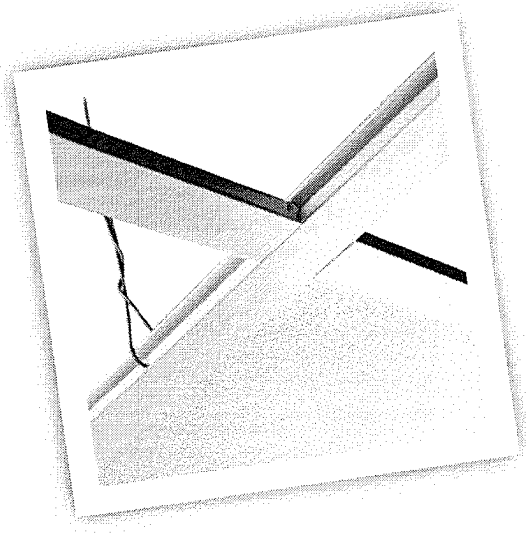
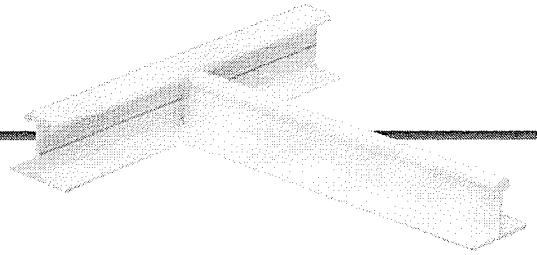
Cactus Canvas



www.DESIGNSFRP.com

SANIGRID® II

FIBERGLASS CEILING GRID SYSTEM



Sanigridd II is an all-fiberglass ceiling grid system that will resist moisture in high humidity and chemical environments. It will not rust, pit, dent, or peel like metal grid systems and it is very easy to install.

The new Sanigridd II system uses a series of pre-notched main tees and cross members to lock the grid together. The entire system snaps together quickly for faster installation.

Product Specs

Available Sizes

2' x 2' | 2' x 4'

Ceiling Configurations

Colors

White

Fire Rating

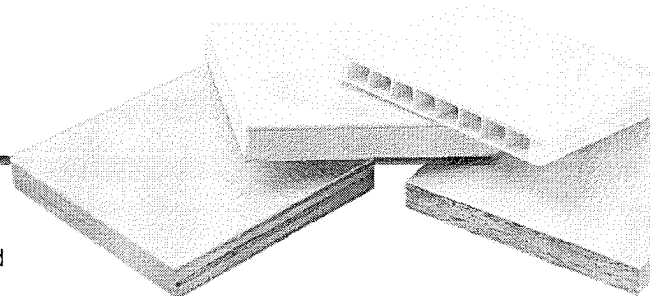
Class A per ASTM E-84

Applications

Food Processing Plants
Chemical Processing Plants
Refrigerated Warehouses
Commercial Kitchens
Restrooms

GLASBORD®

LAMINATED PANELS (KEMPLY)



Fabricated by laminating a **GLASBORD** with Surfaseal panel to a rigid substrate, **GLASBORD** Laminated Panels have structural strength and can be installed directly to studs or as a ceiling panel.

Product Specs

Available GLASBORD Skins

Class C Fire Rated per ASTM E-84

0.05" (1.3mm) Pebbled Embossed | PWI

0.09" (2.3mm) Pebbled Embossed | PIF

0.075" (1.9mm) Smooth | PSIF

Class A Fire Rated per ASTM E-84

0.09" (2.3mm) Pebbled Embossed | Fire-X

0.075" (1.9mm) Smooth | FSI

Available Substrates

Fluted Polypropylene

Oriented Strand Board

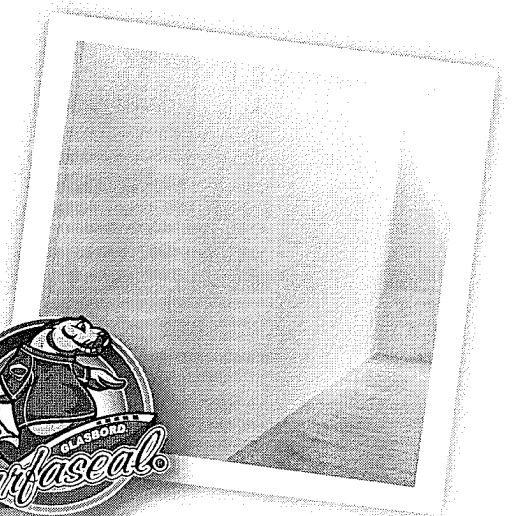
Gypsum

Plywood

Applications

Car Washes
Food Processing Plants
Chemical Processing Plants
Refrigerated Warehouses
Commercial Kitchens
Restrooms
Locker Rooms
Dormitories
Kennels
Laboratories

GLASBORD Laminated Panels are the only FRP laminated panels with Surfaseal.



MOLDINGS



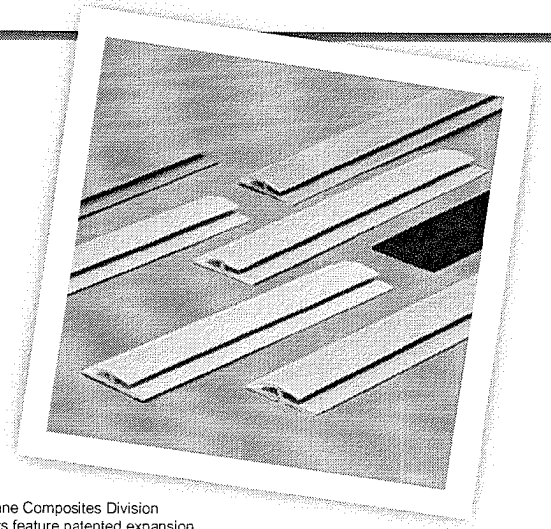
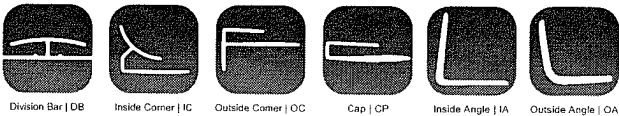
Standard GLASBORD Moldings

Standard moldings are contractor grade moldings perfect for use with FRP panels. Available in 10' lengths.

Colors



Profiles

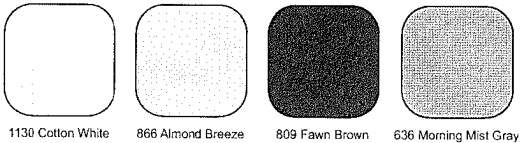


Crane Composites Division Bars feature patented expansion control guides to assist with proper FRP installations

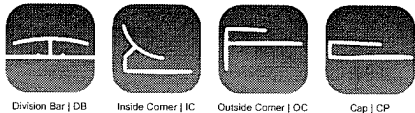
Silhouette Trims

Silhouette Trims offer a narrow profile to minimize the seam. Available in standard colors or Pattern Matched for DESIGNS panel installations

Colors



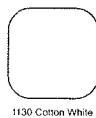
Profiles



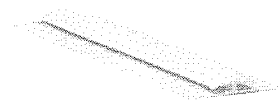
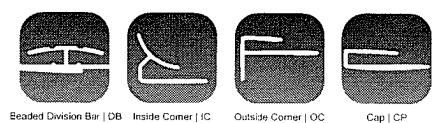
Beaded Panel Moldings | White

Specially designed beaded division bar to complement beaded panel installations. Available in 10' lengths.

Color



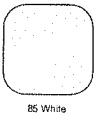
Profiles



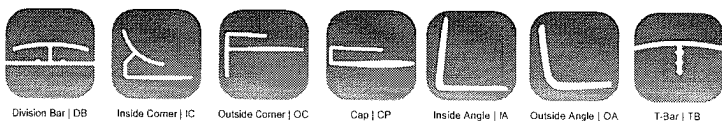
Standard GLASBORD Laminated (Kemply) Moldings

Standard moldings are contractor grade moldings that accommodate panels up to 0.437" thick. Available in 10' lengths.

Color



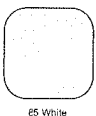
Profiles



Two-Piece GLASBORD Laminated (Kemply) Moldings

Standard moldings are contractor grade moldings that accommodate panels up to 0.437" thick. Available in 10' lengths.

Color



Profiles



DON'T FORGET THE INSTALLATION ACCESSORIES



Nylon Drive Rivets

Non-staining nylon drive rivets in matching panel colors are designed for quick and easy installation using only a hammer and drill. When used with silicone sealants, drive rivets maintain an effective moisture seal as well as providing excellent mechanical fastening for panels.

Rivets are available in 3/4", 1" and 1.5" lengths.

Available in White, Cream, Beige, Silver and Gray

FRP Panel Roller

Handle quickly adjusts from 17" to 27"

Sturdy and nickel plated

No axle projections allowing for flush work into corners

V-Notched Trowel

5/16" x 3/16" x 1/4" V

Cold rolled steel blade

Molded polypropylene handle

Titebond GreenChoice FRP Fast Grab Adhesive

(4 gallon pail)

Bond FRP to many common porous building materials including drywall and non-treated plywood.

Environmentally Safe - VOC Compliant
Quick Grab - Minimal Bracing
Cleans Easily with Water in Wet State

Titebond GreenChoice Advanced Polymer Adhesive

(3.5 gallon pail)

High performance, professional strength advanced polymer adhesive specifically formulated to be used for most types of paneling installations.

Environmentally Safe - VOC Compliant
Contains No Water
Trowels Easily

Recommended Substrates

Gypsum Wallboard, Fire Rated Plywood, Pressure Treated Plywood, Fiberglass Faced Gypsum Wallboard, Mold Resistant Gypsum, Wallboard, Ceramic, Steel, Foamboard, Vinyl, PVC, FRP, Laminate, Concrete

More Information

We have recently added a complete Resource Center to our website. Please visit for additional information including Product Literature, Technical Data Sheets, 3-Part Specifications and more.

If you are still not finding what you need, please contact us at
1.800.435.0080 or salesbp@cranecomposites.com

WHEN USING FRP PANELS IN A CEILING GRID

Crane Composites strongly recommends FRP ceiling panels to be used with butt-end ceiling grid systems in order to minimize gaps between the panel and the grid system. Smooth FRP panels will highlight the space between the grid and a flush mounted ceiling panel. Crane Composites is not responsible for space between panel and grid when overlay grid systems are used.

For optimal results use Sanigrd II - Fiberglass Ceiling Grid System

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We believe all information given is accurate. It is offered in good faith, but without guarantee. Since conditions of use are beyond our control, all risks are assumed by the user. Nothing herein shall be construed as a recommendation for uses which infringe on valid patents or as extending a license under valid patents.

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www.FRP.com | 1.800.435.0080 | 1.815.467.8666 (fax) | salesbp@cranecomposites.com

Crane Composites is the manufacturer of Glasbord, Sequentia, Sanigrd II and a variety of other fiberglass reinforced plastic (FRP) composite wall panels. Inspired by the Kemlite tradition, Crane Composites has over 55 years of experience in commercial building products and is a recognized industry leader in FRP applications.

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