

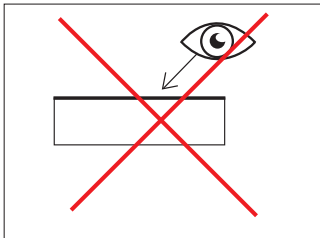
# chroma® | fabrication manual

## guidelines for working with and fabricating 3form Chroma

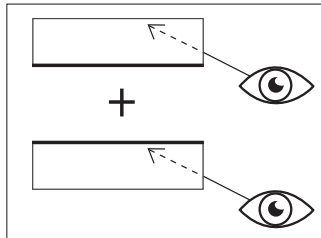
The completion and installation of applications produced from 3form Chroma® may involve secondary fabrication operations including cutting, drilling or bonding. This publication covers the properties and characteristics of Chroma that need to be taken into account if secondary operations are to be performed successfully.

### IDENTIFYING COLORED SIDE

The colored side of Chroma will always be masked with a clear protective layer and a sticker. The renewable matte side will be masked with a paper protective coat. If the protective films have been removed, identify the colored side by looking into the edge of the panel. View the edge of the panel at an angle so that you are looking through the top face into a light source. Flip the panel over and repeat. The colored side will appear darker than the non-colored side. The non-colored side will appear colored due to the reflection of the light from the colored side. To identify a panel properly, always look through both sides.



Do not look through the front or rear face of Chroma.



Look through side of Chroma upwards toward a light source, then flip Chroma panel 180 degrees and view from side again.

### CHROMA REFLECT

3form Chroma Reflect has a different material construct than 3form Chroma. As a result 3form Reflect has fabrication limitations including cutting, routing and fastening. When cutting panels using table saws or panels saws where the blade is situated below the panel, the back side (reflect side) of the panel needs to be facing UP. The back side of the panel should be facing down if it is being cut by a circular saw or a panel saw where the blade is above the panel.

Chroma reflect panels can be cut with a CNC router or a plunge router. Chroma Reflect MUST be scored with a 1/16" or 1/8" blade or tool before routing. All CNC cutting must be done from the back side. Chroma Reflect panels CAN NOT be cut with a jig saw or reciprocating saw.

## Cutting and Drilling Techniques

Chroma can be fabricated with most tools used for machining plastics, wood or metal. Tool speeds should be such that the Chroma panels do not melt from frictional heat. In general, the highest speed at which overheating of the tool or sheet does not occur will give the best results.

It is important to keep cutting tools sharp at all times. Hard, wear-resistant tools with greater cutting clearances than those used for cutting metal are suggested. High-speed or carbide-tipped tools are efficient for long runs and provide accuracy and uniformity of finish. Bring the blade to full speed before starting the cut. Secure the sheet to minimize vibration. Since engineered resins are poor heat conductors, the heat generated by machining operations must be absorbed by the tool or carried away by a coolant. (A jet of air directed on the cutting edge will aid in cooling the tool and removing chips.) Another method of reducing heat is by making several passes while cutting or trimming the part rather than trimming "deep" through the part. Use up-cut tooling.

### SAW CUTTING

To cut 3form Chroma, use an overhead panel saw, beam type panel saw or a table saw. Table saws should have minimal vibration and be powerful enough to make the cuts (3-10 hp). Most table saws operate at 3,450 rpm.

Panel saws range from 10-30 hp, with blade rotations ranging from 2,000 to 8,000 rpm. Make sure that the panel saw provides full and close support under the sheet during cutting. Lack of continuous support during cutting may result in chipping on the bottom of the sheet. It is possible to use a sacrificial piece of MDF to provide this continuous support.

Blade design plays an important part in successful sawing of Chroma sheets. A triple chip carbide tipped saw blade is recommended for cutting Chroma sheets. Best results are achieved with teeth that have a clearance angle (top clearance) of 10°-15°. The proper rake or hook angle, 0°-5° positive, ensures the teeth do not strike the material too aggressively. The optimum number of teeth per blade is also important. For 10", 12" and 14" diameter blades, 60 tooth blades are recommended. Forrest manufacturing company No-Melt saw blades are recommended for all saw cutting. Proper selection of the blade should be made by considering the surface feet per minute (SFM) of the blade in the saw. For Chroma, the SFM should be between 6,000 and 14,000 ft/min (1,830 and 4,270 m/min). To determine the SFM of the blade, you can use this formula.

$$\text{SFM} = \text{Diameter (inches)} \times \text{RPM} \times 0.262$$

Typical feed rates for Chroma are 100" to 300" per minute. Saw blade dampeners can be used to reduce the saw blade vibration. This will result in improved saw cut quality of your Chroma panels. High perfor-

mance beam saws can cut Chroma up to 2" thick using an 8-10% feed rate. Chroma thicker than 2" can be cut using a CNC with a 1" diameter cutter having a 4" cutting edge.

For table or panel saws with the blade mounted underneath, the blade should protrude approximately 1/8" to 1/2" above the Chroma panel. On overhead blade-mounted panel saws, the blade should protrude 1/32" through the material.

Remember: Be sure to hold or clamp the panel securely while sawing to prevent chattering which can cause cracking.

## DRILLING

Drills designed especially for plastics are available and it is suggested that the fabricator utilize such drills on Chroma. Tip angles on standard drill bits are 118°- 130°, while tip angles to be used with Chroma should be 60°- 90°. Smaller tip angles will generate smaller chips and reduce melting. Optimum bit speed, feed rate, and applied pressure will depend on hole size and sheet thickness. Drill speeds up to 1,750 rpm are best for smaller holes, while speeds as low as 350 rpm can work for larger holes.

Twist drills used for plastics are well suited for Chroma —they should have two flutes, a point with an included angle of 60 to 90 degrees, and a lip clearance of 12 to 18 degrees.

Wide, highly polished flutes are desirable since they expel the chips with low friction and thus tend to avoid overheating and consequent gumming. Drills with substantial clearance on the cutting edge of the flutes make smoother holes than those with less clearance. Drills should be backed out often to free chips, especially when drilling deep holes. Peripheral speeds of twist drills for Chroma ordinarily range from 20 to 160 ft. (6 to 48.8 m) per minute. The rate of drill feed into the plastic sheet generally varies from 0.001 to 0.015 in (0.0254 to 0.381 mm) per revolution. It is best to place a piece of plywood or MDF underneath the Chroma panel being drilled. This prevents chipping on the bottom surface. Below is a chart that details recommended surface feet per minute (SFM) and inches per revolution (IPR) for different bit sizes.

If panel gauge is less than 1", DO NOT DRILL closer than 2" from any edge

If panel gauge is between 1" and 2", DO NOT DRILL closer than 1.5" from any edge

Remember: When drilling be sure to hold or clamp the part securely to prevent it from cracking or slipping and presenting a safety hazard to the operator.

## MILLING

Chroma can be machined with standard high-speed milling cutters for metal, provided they have sharp edges and adequate clearance at the heel. Remove most of the material with the first pass and then run a final pass against the blade. Do not use climb cutting, as this will fracture the Chroma.

## ROUTING

Routing can be done with a manual router or a CNC controlled machine. For manual routing, a sharp two-flute 1-1/8" (28.5 mm) diameter straight cutter produces very smooth edges. Routers are useful for trimming the edges of flat or formed parts, particularly when the part is too large or irregular in shape for a band saw. Portable, overarm, and under-the-table routers work equally well. Chroma should be fed to the router slowly to avoid excessive frictional heating and shattering. The router or

sheet, whichever is moving, must be guided with a suitable template. Compressed air can be used during the routing operation to cool the bit and aid in chip removal.

When cutting Chroma using a CNC router, a solid carbide, up-spiral "O" flute router bit is recommended for both hogging and finishing. 3form recommends using 1/2" diameter tooling with 3form Chroma. Onsrud 52-700 series and 52-600 series both provide good cuts. 3form Chroma should be cut using a SFM between 500 - 1,800 ft/min with a chip load between 0.004" and 0.015". Normal tool speeds for a 1/2" tool are 18,000 rpm and 500 in/min.

Tools with a flat faced cutter are recommended for engraving applications. Onsrud 66-300 series engraver tools are recommended for engraving. Recommended engraving speeds are 9,000 -10,000 rpm and feed rates at 55 to 65 in/min. Chip load should be between 0.003" and 0.006" per tooth.

## CNC ENGRAVING

TOOL	DIAMETER	# OF FLUTES	RPM	FEED RATE (IPM)	SFM	CHIP LOAD
66-327	1/2"	2	18,000	200	2,358	0.0056"
60-249	1/2"	3	12,000	200	1,572	0.0056"

## CNC CUTTING

TOOL	DIAMETER	# OF FLUTES	RPM	FEED RATE (IPM)	SFM	CHIP LOAD
52-702	1/2"	2	18,000	250	2,358	0.0069"

## PANEL SAW CUTTING

TOOL	DIAMETER	# OF TEETH	RPM	FEED RATE (IPM)	SFM	CHIP LOAD
1/2"	14.96"	84	4,800	600	18,813	0.00148"
1"	1/2"	84	4,800	528	18,813	0.00130"

## TABLE SAW

SAW BLADE	BLADE DIAMETER	# OF TEETH	RPM	FEED RATE	SFM
NO-MELT	12"	60	4000	200	12,576

## ETCHING

### CNC ETCHING

- Routing 1/8" deep into the face or back of the sheet to create etching with depth.
- This process creates machine marks which must then be sandblasted to remove machine marks. The sandblasting will create a frosted effect inside the etching.
- CNC etching is not recommended when specific logo details or text lines must have sharp corners.
- CNC etching will have no less than a 1/16" radius on all inside corners due to tooling.
- CNC etching can be heat formed.
- CNC etching is recommended to be used on the colored side (back) of the sheet as a back ground effect.

### LASER ETCHING

- It is recommended that 3form perform this process.
- Achieves a white frosted appearance that is perfect for logos or text.
- Laser etching can be heat formed.
- Not recommended for the colored side of Chroma.
- Not recommended to be used with white out or Ghost as the etching will be too faint in appearance.

## EDGE POLISHING

To polish the edge of 3form Chroma, first inspect the edge to be polished. Well machined edges can be polished without sanding, while rough cut or saw cut edges need to be sanded, or finished with a jointer. Once the edge is free of machining marks, the edge can be polished using a soft, bleached muslin wheel with bias strips. 3form recommends using a medium cutting compound like white rouge. Higher lusters can be achieved using finer polishing compounds with a flannel wheel. Be careful not to generate too much heat while polishing as this will create a stressed edge that is susceptible to cracking or crazing.

## REFINISHING

3form Chroma is an ideal material choice for many applications such as table tops and counter tops. When specified for such applications, it is possible for the top surface (front finish) of the Chroma to experience scratching. Chroma has a unique renewable matte finish that allows scratches to be easily repaired. Following is an explanation on how to renew a Chroma panel to its original beauty.

## MATERIALS NEEDED

- Random Dual Action Orbital Sander (5", 6" or 11.5")
- Sandpaper (3M 366L 80 micron, or 220 grit)
- Coarser grit sand paper (grade 120-150 to remove heavy scratches)
- Water Spray Bottle

## STEP 1

If the scratches are deep (greater than 1/16" in depth) use a coarse sand paper to sand the damaged area of the panel. Make sure to sand in a large circular area at least 12" away from the scratch in every direction. If you only sand the affected area, it will cause an irregular surface that will be noticeable when you are finished. Continue sanding in circular patterns until the scratch/damage is completely removed.

## STEP 2

Begin sanding the surface using an orbital speed (10,000-12,000 rpm) in small random circular movements. Continue sanding until the surface is free of the scratches that were caused by the coarse paper in the previous step. Clean the surface with a mixture of mild detergent and clean water using a clean, dry cotton cloth.

## DO

- Place sander flat on surface before applying power.
- Maintain flatness during use.
- Stop the tool as it is removed from the work surface.

## DO NOT

- Use linear movements.
- Refinish the colored side (Back Finish) of Chroma.
- Dig into the surface or use excessive pressures.
- Concentrate the sander in one spot for prolonged time (this may generate excessive heat).

## Joinery

### ADHESIVE SEAMS

Light Seam - Replaces miters for 90 degree joints.

Structural Seam - for large features beyond standard sheet sizes.

Field Seam Prep - improves quality and fit of field seaming.

In-Field Seam - Flat panel to panel seam done on-site. Process detailed

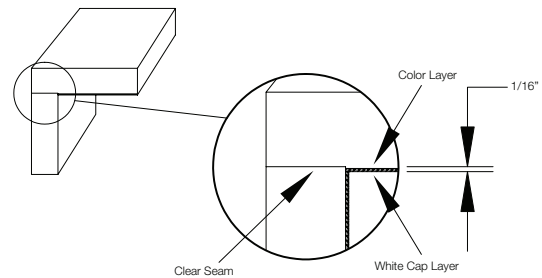
in adhesive bonding section.

Butt Seam - only to be used with Renew or translucent colors (Not to be used with White Out, Ghost or Fapor) 90 degree seams only.

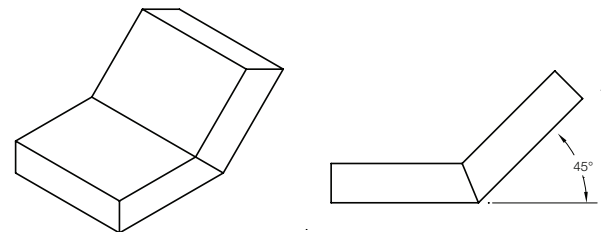
Miter Seam - Use as a last resort and only on NON 90 degree angles. Airbubbles will be visible. (Shown below)

### LOOSE SEAMS

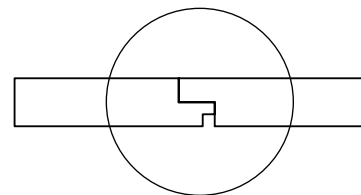
Loose Seams are NOT glued and are used primarily when panels are backlit. 3form recommends using 3form Align hardware with these loose seams.



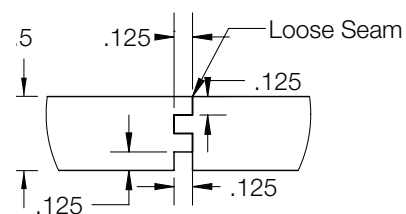
**LIGHT SEAM**



**MITER SEAM**



**HALF LAP QUIRK** - great accessibility for multiple panel installations.



**TONGUE AND GROOVE QUIRK** - best aesthetic loose seam however accessibility is limited on larger installations.

# Fastening and Adhesion Techniques

## MECHANICAL FASTENING

Chroma can be fabricated into attractive joints with mechanical fasteners. Self-threading screws should not be used with Chroma panels. Mechanical fastening is recommended for assembly of larger articles.

3form Chroma should never come in direct contact with metal fasteners. Non-metallic\* gaskets, washers, and tubing are to be utilized in conjunction with mechanical connections such as point supports and frames. Holes for fasteners must be located a minimum of 2" from the edge of the hole to the edge of the panel.

Please contact the 3form Technical Help Line should you have any questions regarding the use of Chroma with mechanical fasteners.

\*Gaskets, washers and tubing must be produced with a non-plasticized material. Suitable materials include: neoprene, teflon, nylon, silicone.

## MECHANICAL FASTENING GUIDELINES

### DO

- Drill holes slightly oversized to allow for thermal expansion and contraction.
- Insure drilled holes and cut edges are smooth and free of chips and notches.
- Use non-metallic washers for better load distribution.

### DO NOT

- Over tighten fasteners. Hand tightened fasteners are sufficient.
- Use self-tapping screws.
- Use Cyanoacrylate or solvent type thread locking materials (Loctite).

Failure to conform to these guidelines may result in cracking, crazing or harm to 3form Chroma.

## BONDING TECHNIQUES: ADHESIVES

Generally, Chroma (with the exception of Applied Colors) bonding is achieved with a two-part adhesive. These adhesives bond well to most surfaces including plywood, metal and other plastics. 3form recommends the use of Plexus Acrybond P9157 for Chroma seaming. Plexus Acrybond is a 2-part acrylic adhesive that has a clear color and a 5-10 minute working time. 3form recommends the use of Devcon Plastic Welder II and Momentive Performance Materials SilGlaze II SCS 2801 for applying Chroma to substrates such as wood or metal. Devcon Plastic Welder II is a 2-part acrylic adhesive that has a yellow color and a 15-20 minute working time. SilGlaze II SCS2801 is a cloudy colored clear silicone that has a working time of 30 minutes.

As Chroma is typically used in applications that require structural performance, we do not recommend using solvents for bonding or seaming Chroma panels. Chroma Applied panels should never be used with adhesives of any kind. To secure or attach Chroma Applied panels, use mechanical fasteners.

## IN-FIELD SEAMING INSTRUCTIONS

The following process for seaming 3form Chroma was developed to mimic the solid surface seaming process. However all 3form seaming steps must be followed systematically to achieve an aesthetically desirable seam. The following materials necessary for the seaming process are available for purchase from 3form as a complete kit.

### MATERIALS NEEDED

- Plexus Acrybond P9157, 380mL cartridge
- 380mL co-axial applicator gun
- (4) mixing tips

(30) custom clamping blocks

(1) roll 3M™ 8952 tape

(24) 2" pony springs clamps (remove rubber tips from ends of clamps)

Hot glue gun

(3) Hot glue sticks

(Items NOT included in 3form seaming kit)

Nitrile Gloves

Putty Knife

Hammer

Razor Blade

100,150 and 220-grit dry sandpaper

## SEAMING INSTRUCTIONS

1. Store Plexus Acrybond cartridge in an upright position. This allows air in the cartridge to rise to the tip. Store cartridge between 55-75°F. Shelf Life of Plexus Acrybond is 6 months. Always check for the expiration date on the cartridge.

2. Test the edges to be bonded by wiping with Weld On 3 or Methyl Ethyl Ketone (MEK). If any micro-cracking (crazing) is observed, the edge needs to be remachined. To prep the edges of the Chroma panel for seaming start by sanding away all visible saw or machine markings. Sand using a flat block to assure that the seam is square and flat. Continue sanding using finer grit papers until finishing with 220 grit paper.

3. Set-up Chroma sheets to ensure that they are level and square at the joint to be seamed together. This can be done on the sub-top of the counter top itself or on leveled saw horses. Bottom surfaces of the seam should be aligned. (See Figure 1) Make sure that the colored side of the panel is facing down. It is critical to understand that you must be able to access the bottom side of the joint after adhesive application. Excess glue and tape must be removed after adhesive has cured.

4. Begin by pre-taping the bottom of each Chroma panel using the 2" 3M 8952 tape. Place the tape over the edge to be seamed. Make sure to burnish tape using moderate pressure and then trim flush with a razor blade. The tape will keep the excess adhesive from adhering to the bottom of the Chroma panel.

5. Draw a pencil line 3/8" from the edge to be seamed. Place clamping blocks along pencil line approximately 1/2" to 1" (1.3 - 2.5 cm) apart. The slotted saw cut should be positioned closest to the joint. Repeat for opposite side of joint. Clamping blocks should be applied using the hot glue gun. (included in kit) Apply hot glue to the bottom of the clamping block, apply block to Chroma surface and hold in place for 15 seconds to ensure proper fixture. The resulting blocks should be paired across the joint as shown in Figure 2.

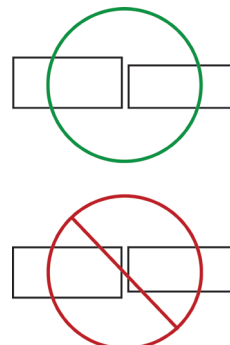


Figure 1

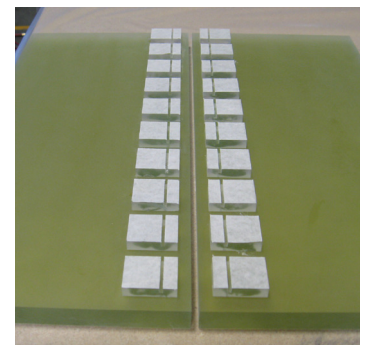


Figure 2

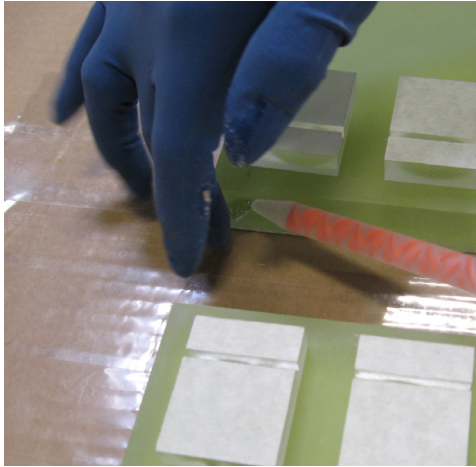


Figure 3

6. Place Chroma panels approximately 2" (5 cm) apart to prep for adhesive application. To use the Plexus Acrybond adhesive, first load the cartridge into the dispense gun, take care to always keep the cartridge in a vertical position while doing so. Next "burp" the cartridge: while still pointing the gun upwards squeeze out 1-2 oz of adhesive until no more air bubbles are seen. Clean nozzle tip area with a dry rag. Attach and secure the mixing nozzle to the cartridge with the retaining nut. Run mixed product through the nozzle and "purge" a small amount as waste. (approximately a quarter-sized puddle) Then apply a liberal amount of adhesive on both sides of the joint. Spread the adhesive evenly with your finger. (Use nitrile gloves) The spreading of the adhesive is critical to ensure air bubbles are minimized in the finished seam. (See Figure 3)



Figure 4

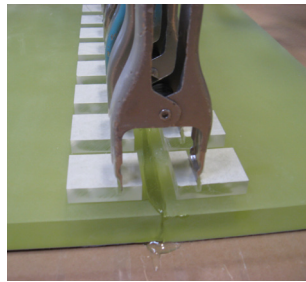


Figure 5

7. Slide sheets together until adhesive starts to ooze out slightly. Make sure to line up the panels at the edges and bottom surface. Begin to place spring clamps on the clamping blocks beginning at the center and working outwards. Apply the clamps quickly before the glue sets up. Plexus Acrybond has a working time of 3-5 minutes at 75°F. Warmer temperatures will accelerate the cure speed of the adhesive. It is essential that one work in a brisk manner when applying the adhesive and mating/clamping the parts. Once again, check that sheets are flush on the edges and bottom surface. Next use a putty knife to scrape off excess glue from the BOTTOM SURFACE ONLY. Leave the full glue bead on the top surface. See Figures 4 and 5.

8. Allow the adhesive to cure for 1 hour before removing clamps. Allow adhesive to cure for 4 hours before sanding. To remove clamping blocks, use a putty knife and hammer. Tap the tip of the putty knife under each block to remove block from Chroma surface. Scrape any remaining hot glue from the Chroma surface with the putty knife. (If gluing more than one joint, you will need to clean excess hot glue off of clamping blocks using a sharp chisel).

9. After 1 hour remove 3M 8952 tape from the bottom surfaces. Plexus Acrybond requires 24 hours to reach full strength.

10. Sand top surface of Chroma at joint area (at least 6-12" on each side of joint) using an orbital sander with 100-grit sand paper. Utilize a sanding pattern similar to Figure 6. Make sure that sanding technique results in a flat even surface (Note: Keep the sander moving to ensure evenness. If sanding is concentrated in any one area, the result will be an uneven surface). After sanding is complete run the palm of your hand over the surface to check for uneven sanding. Repeat process with 150-grit sandpaper.

11. Finish by sanding with 220-grit sandpaper. This process will replicate the 3form renewable matte finish applied at the factory. It is recommended to sand the entire surface to give a consistent finish.

12. Upon completion of sanding, spray entire sheet with water and wipe down with a clean cotton rag until all sanding residue is removed.

### BONDING TO SUBSTRATES (BARTOP/COUNTERTOP MOUNTING)

When bonding Chroma (NOT applicable for Chroma Applied) to a substrate or sub-top material 3form recommends the use of Momentive Performance Materials (formerly GE Silicones) SilGlaze II SCS 2801. Silglaze II is an excellent choice because it is flexible once cured and allows for expansion and contraction of the Chroma sheet. It is recommended that any wood (plywood or MDF) sub-top be sealed with an acrylic, laquer or polyurethane sealer before bonding with SilGlaze II. The SilGlaze II should be applied as dots on the subtop with each dot being 3/4" in diameter and each dot separated by 12". Apply Chroma panel and apply light pressure. Do NOT spread the adhesive, as silicones require air to cure. Do NOT clamp. Allow silicone to cure for 24 hours before handling.

Chroma may also be bonded to a substrate or countertop using Devcon Plastic Welder II. This product can be used to bond Chroma to unsealed wood, metal and most plastic substrates. The Plastic Welder II should be applied with 25% coverage for most horizontal applications. Vertical applications or cantilevered applications will require greater adhesive coverage depending on the design and panel weight. Devcon Plastic Welder II is yellow in color, and is typically hidden by specifying a White Out layer to the Chroma panel.

The C3 Chroma White Out layer may alter the tone of the Chroma so please make sure to request samples to determine if this is acceptable. Opaque layers do not permit backlighting, but edge lighting is possible. 3form recommends not clamping parts, but if pressure is necessary use light pressure (less than 10 lbs). DO NOT use cyanoacrylates (super-glue) or solvent adhesives with 3form panels. Use Nylok blue patch or a 2-part adhesive like Devcon Plastic Welder II for all thread locking applications.

Be sure to consult with the 3form Adhesives Matrix prior to bonding.

When larger articles are to be joined or fastened, mechanical fastening is recommended.

### BONDING TECHNIQUES: VHB TAPE

Clear 3M VHB™ tape 4910 or 4905 can be used to adhere Chroma to a variety of substrates while still achieving desirable aesthetics. 3M VHB tape can be used to attach Chroma to sealed wood, sealed ceramics, metal, glass and some other plastics. VHB tape is UV stable and can be used for interior and exterior applications as well as in the toughest environmental conditions. 3M VHB tape provides an excellent seal against moisture, however splices or seams in the tape may require additional sealing. The tape can tolerate some shear extension due to substrate

movement from thermal expansion and contraction. Surface preparation is needed before applying 3M VHB tape to a Chroma panel. First both surfaces are to be cleaned with water. Following cleaning allow surfaces to dry thoroughly. The tape can be applied to the first surface. Only handle the tape by the edges and apply firm pressure to the tape using a roller. Attach the second bonding substrate and apply pressure on the finished joint with a roller. Apply firm application pressure to the entire length of the taped area (at least 15 psi is necessary) to develop good adhesive contact and to improve the bond strength. Bond strength will increase over time. 90% of the ultimate strength will develop after 24 hours and full strength after 3 days. Ultimate bond strength can be achieved more quickly by exposure to higher temperatures (e.g. 150°F for 1 hour). If the entire weight of the Chroma panel is supported by the 3M VHB Tape, a minimum of 4 in<sup>2</sup> (25.8 cm<sup>2</sup>) of tape should be used for every 1lb (0.45 kg) of panel weight to be supported. Call the 3form Technical Help desk with any questions, especially when bonding Chroma to other nonmetal substrates.

#### DO

- Seal porous materials like cement and wood before bonding.
- Keep tape away from debris and handle tape by the edges.
- Make sure both surfaces are clean and dry.
- Use water wipe for metal and plastic surfaces.
- Apply Tape to first surface, apply firm pressure (more than 15 psi) with a roller.
- Remove liner from second side of tape and apply to second surface.
- Apply very firm pressure to entire bond line.
- Wait 72 hours until tape has reached full adhesion strength (1 day = 90% strength).

#### APPLICATION TECHNIQUES: SILICONE SEALANTS

Momentive Performance Materials SilGlaze II SCS2800 and Construction SCS1200 can be used to seal Chroma in glazing applications. SilGlaze II is not a structural silicone and should not be used to create a bond that may experience any type of loading. For structural applications use Construction SCS 1200. SilGlaze II is a one part, neutral, fast curing silicone sealant. This can be used as a general-purpose weather and glazing sealant for Chroma panels. SilGlaze II is not recommended for applications where the product will be in continuous contact with water. Further SilGlaze II sealant cannot be used on bare metal or surfaces that are susceptible to corrosion. This silicone sealant is formulated to adhere to glass, vinyl extrusions, fluoropolymers, acrylics, polyester paints, powder coated aluminum, and most other plastics. GE SS4004P (or tinted SS4004P) silicone primer can be used to enhance adhesion to substrates if desired.

To apply, the surface must be wiped free of debris then wiped with a cloth wetted with a 50/50 isopropyl alcohol and water solution, then followed by wiping with a clean dry cloth. In a continuous operation apply the sealant horizontally in one direction and vertically from bottom to the top. Apply the sealant with positive pressure by pushing the bead ahead of the nozzle and making sure the entire cavity is filled. Tooling should force the sealant into contact with the sides of the joint or cavity, eliminating any voids. (Dry tooling is recommended.) Maximum cure depth from an air interface should not exceed 3/8" (9.5 mm). Excess sealant should be wiped away with the 50/50 isopropyl alcohol and water solution before curing. Additional technical support can be reached by contacting the 3form Technical Help Desk at 1-801-649-2670.

#### DO

- Insure all surfaces are clean and free of debris.
- Make sure of proper surface preparation on all surfaces to be sealed.
- Make sure the silicone has access to atmospheric moisture.
- Select a colored sealant when necessary (white, black, aluminum, blue white, bronze and beige are available).

#### DO NOT

- Use this technique in underwater applications or applications where there is continuous contact with water.
- Use sealants in food contact applications.
- Apply to bare metals or surfaces that can corrode (i.e. mill aluminum, bare steel, etc.).
- Use in cavities or designs where the cure depth exceeds 3/8" (9.5 mm) from an air interface.

The following table lists several adhesives and bonding mediums that provide strong bonds with Chroma.

#### ADHESIVES AND SEALANTS FOR CHROMA FABRICATION

PRODUCT NAME	DESCRIPTION	APPLICATION
Plexus Acrybond MA685	2-Part Acrylic Adhesive	Chroma to Chroma
Devcon Plastic Welder II	2-Part Acrylic Adhesive	Chroma to wood, metal
3M VHB 4910	2-Sided Structural Tape	Chroma to sealed wood, metal, glass, plastics
Momentive SilGlaze II SCS2801	Clear Silicone Sealant	For sealing edges (glazing)
Momentive Construction SCS1201	Clear Structural Silicone	For structural silicone bonding

#### DO

- Start with a flat surface.
- Insure sheet edges and surfaces are clean and free from contamination.
- Wipe surface with water.
- Allow surface to dry thoroughly before bonding.
- Insure that surfaces to be bonded are smooth, mate well, and are accurately aligned.

#### 3FORM FABRICATION

3form offers full service Fabrication and guarantees work with our standard product warranty. Contact your local sales representative or our technical service line if your application has complicated fabrication or detailing requirements.

For more information, please visit [3-form.com](http://3-form.com) or call 877-649-2670.