

Wilsonart® Compact Laminate



Contents

<u>Introduction</u>	<u>2</u>
<u>Safety/Precautions</u>	<u>3</u>
<u>General Information (Handling/Storage, Tooling)</u>	<u>5</u>
<u>Fabrication (Machining, Joining, Finishing)</u>	<u>6</u>
<u>Installation - Partitions</u>	<u>9</u>
<u>Installation - Wall Systems</u>	<u>11</u>
<u>Installations - Protective Panels (Hospital Headboards, Kick-plates)</u>	<u>15</u>
<u>Molding Suppliers</u>	<u>16</u>



The product information and fabrication techniques contained within the Compact Fabrication Guide are provided to promote “best practice” when using the product. Like standard laminates, this product is composed primarily of wood fiber and installations should be engineered to accommodate these characteristics. Other fabrication/installation techniques that are not covered in this manual may be employed providing sufficient engineering considerations are used.



Safety/Precautions

General, Adhesive, Tooling

General Safety

Safety is a critical concern for any shop and a key part of a successful business. The following safety rules should be incorporated into your safety program to help prevent an accident. Safety training, knowledge, product use, and environment are the responsibility of the facility owner and the shop employees.

CAUTION: Always follow product, equipment and/or tools manufacturer's recommendations and instructions carefully.

- Read directions carefully before fabricating/installing Wilsonart Compact laminate.
- Read and follow instruction manual before operating the different tools.
- Keep all guards in place and in working order.
- Insure all tools are properly grounded. Never remove the third prong.
- Keep work area clean, uncluttered and well lit.
- Don't use electric power tools in a damp or wet work area.
- Keep visitors at a safe distance from the work area.
- Use the right tools. Don't force a tool or attachment to do a job it was not designed to perform.
- Always use safety glasses or approved eye protection and/or face shield, ear/noise protectors and safety shoes. (Fig 3A & 3B)
- Wear the proper apparel, no loose clothing or jewelry.
- Secure all work with the proper clamp or vise to a stable work surface.
- Don't overreach. Keep proper footing and balance at all times.
- Maintain tools in top condition. Disconnect tools before servicing and when changing accessories such as blades, bits, cutters, etc.
- Keep and use solvents, adhesives, and other materials in a safe, ventilated place.
- Dust collection should be utilized when cutting, routing, and sanding.
- Dust collection should be utilized when cutting, routing, and sanding. Tools should be used with dust collection at all times.

Adhesive Safety

A variety of different adhesive types can be used effectively with Wilsonart Compact laminate. These different "families" of adhesive require different types/levels of protection and/or precautions. ALWAYS refer to the specific Technical Data Sheet AND Material Safety Data Sheet for usage instructions and health/safety concerns, respectively.

For information concerning Wilsonart Adhesives, contact www.wilsonartadhesives.com or the Wilsonart Hotline at 1-800-433-3222.



Figure 3A



Figure 3B

Fabrication

Fabrication WARNING

Drilling, sawing, sanding, or machining wood products generates wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection.

California Health and Safety Code Section 25249.6



Handling/Storage

Handling:

Wilsonart Compact laminates are very heavy and care should be taken when handling to protect employees and the decorative surface of the product. Large panels should be transported by pallet/fork-truck or rolling table. Vacuum lifts are also recommended for handling large (thick) panels. Additional tips for working with Compact laminate includes:

- Place padding (slip-sheet or protective cardboard strips) between panels when stacking
- Carry thinner types vertically to limit flex and possible breakage.

Storage

As with any laminate product, Wilsonart Compact laminate should be stored in a controlled moderate climate. Avoid storing in excessive heat/humidity extremes. All materials should be acclimated for a minimum of 72 hours before fabrication/installation. Material should not be stored near exterior doors that may result in exposure to rain or temperature/humidity variations.

Store adhesive as recommended by the adhesive manufacturer's suggestions.



Fabrication

Machining

Although Wilsonart Compact laminate is composed of the same materials as a standard laminate product, the mass and density of product requires some differences in how you process the panels. While surface wear inhibitors can be a factor in tool life, the enemy in any machining process is heat. Cutting rates and feed speeds play a major role in both the practical life of tooling as well as the quality of cuts during machining. As in any machining process, specific machines and tool types will vary and specific parameters will have to be established on site. The following information should be considered as a “starting-point” for establishing best practice.

Sawing

When working with Wilsonart Compact laminate, slower feed-speeds should be expected due to the density of the material (as compared to HPL on particleboard/MDF). It is always appropriate to contact your tooling supplier for specific recommendations for feed, speed, and tool geometry. The following parameters have been used successfully in field situations:

While good quality carbide proves effective for small projects, diamond cutting tips may be more durable and cost effective.

- Rate of advance of the cutter (“chip load”) should be .001” - .002”.
- Triple chip designs have shown to provide good cut quality.
- Hook— +15°
- Panel saws with a “scoring-saw” option can minimize chipping on the exit side of the panel.

Routing/Milling

Routing/Milling is the preferred method for final machining of panels. The process can be performed by both hand routers, and automated CNC machines.

Hand Routing—For best results, finished edges of Wilsonart Compact laminate should be routed/milled. Rough cut panels to approximately 1/16” before finish routing. Due to the panels density, it is best to use cutters with larger diameter shanks (1/2”) however, smaller tools may be used with minimal feed rates and trim amounts. Two-flute carbide straight cutting bits work well for trimming double-sided panels.

CNC Routing—The appropriate cutting sequence is largely determined by the type of machining required. For example, large panel sizing may be completely different than cutting out nested parts. In any case, the specific panels thickness, cutting sequence, and type/condition of the machine will require that you “tune” adjustments for your particular process. A good starting point for machining is:

- Spindle speed—16,000—18,000 RPM's
- Feed-rate—200—900 in/min

Fabrication Machining

Drilling

Drilling should be done with twist-style bits. Specialty bits with a tip angle of 60°-80° tend to show better results. These specialty bits are designed with a large pitch (steep twist) and utilize larger chip channels (grooves). To minimize “chip-out” on the exit side of the panel, a “spoiler” board of MDF may be used to reinforce the back face. When drilling blind holes into the surface (holes that do not penetrate through the entire panel), you should leave a minimum 1/16” from the bottom of the hole to the back decorative surface (Figure 7A). When edge drilling, a minimum of 1/8” of the material should remain between the edge of the hole and the adjacent decorative face.

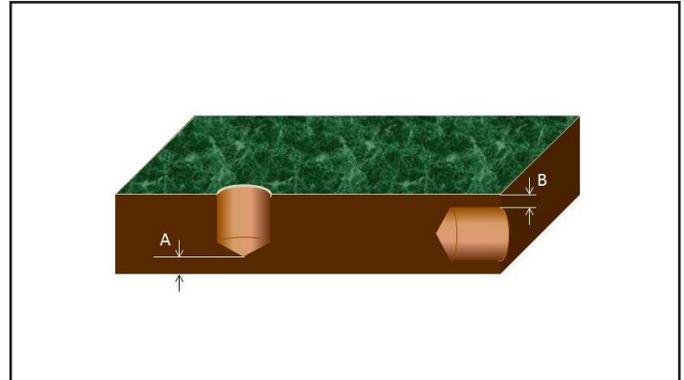


Figure 7A

Edge Shaping

Exposed edges can be shaped to enhance the appearance and ergonomics of the installation. This is especially true for compact used as a work-surface or countertop. Typical shapes include (Figure 7 B):

*Radius should be limited at the transition to the face in order to minimize the “feathering” of the decorative surface.

Build-Downs

To increase the apparent mass of the front edge of a countertop, a “build-down”, or stacked edge, may be fabricated. Edge strips should be oriented in the same “grain” direction. The two bonding surfaces should be aggressively sanded and bonded with a suitable catalyzed (2-part epoxy or urethane) adhesive.

Finishing

Machining edges will normally result in slight-to-moderate cutter/kerf marks. These edges can be finished by sanding using a random orbital sander to a smooth attractive appearance. Edge finishing is a multi-step sanding process that utilizes a sequence of large-to-small grit. Similar to Solid Surface finishing, the final finish can be achieved using the following sanding steps:

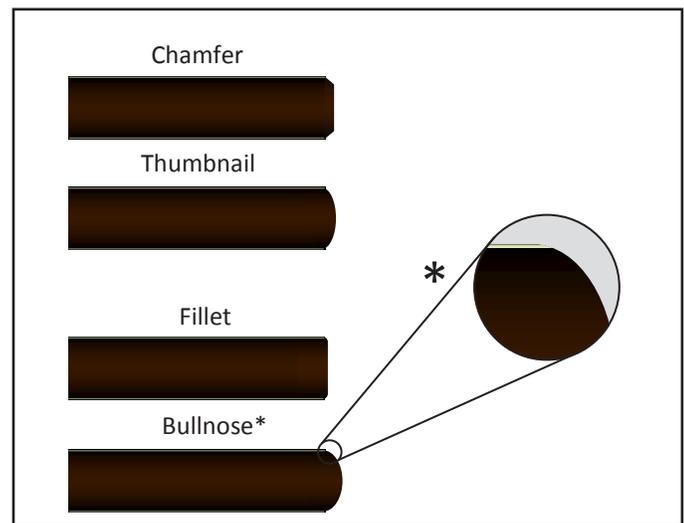


Figure 7B

Matte Finish	Satin Finish	Semi-gloss Finish
100μ	100μ	100μ
80μ	80μ	80μ
60μ	60μ	60μ
	1000 Mirka Abralon	1000 Mirka Abralon
		2000 Mirka Abralon

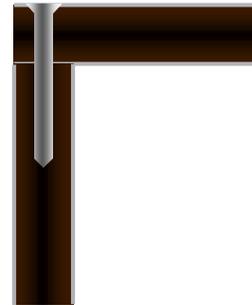
Casework Construction

Compact laminates have many desirable physical properties and excellent performance properties. This is especially true as it relates to moisture and impact resistance. Depending on the intended application, it may be desirable to fabricate casework made partially or fully from compact panels. When joining panels, it is important to remember that as with any laminate, compact is primarily composed of wood fiber. This will result in slight dimensional change as the composite is exposed to changes in humidity. Design and construction of the casework should allow for this dimensional movement.

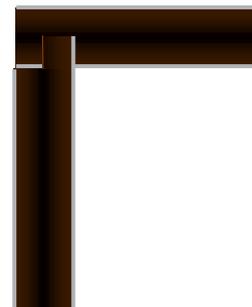
Joining

There are a variety of techniques for joining panels that are suitable for compact assembly. The following illustrations include some of the more prevalent methods:

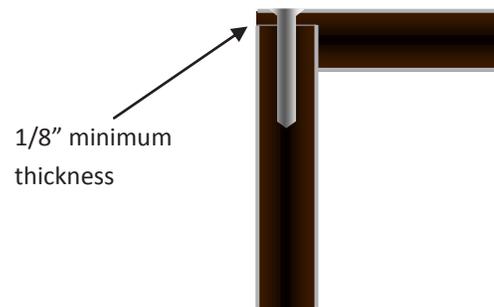
Butt Joined—Mechanical Fasteners



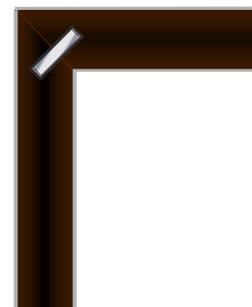
Lock Shoulder—Adhesive Bond



Lap Jointed—Mechanical Fasteners



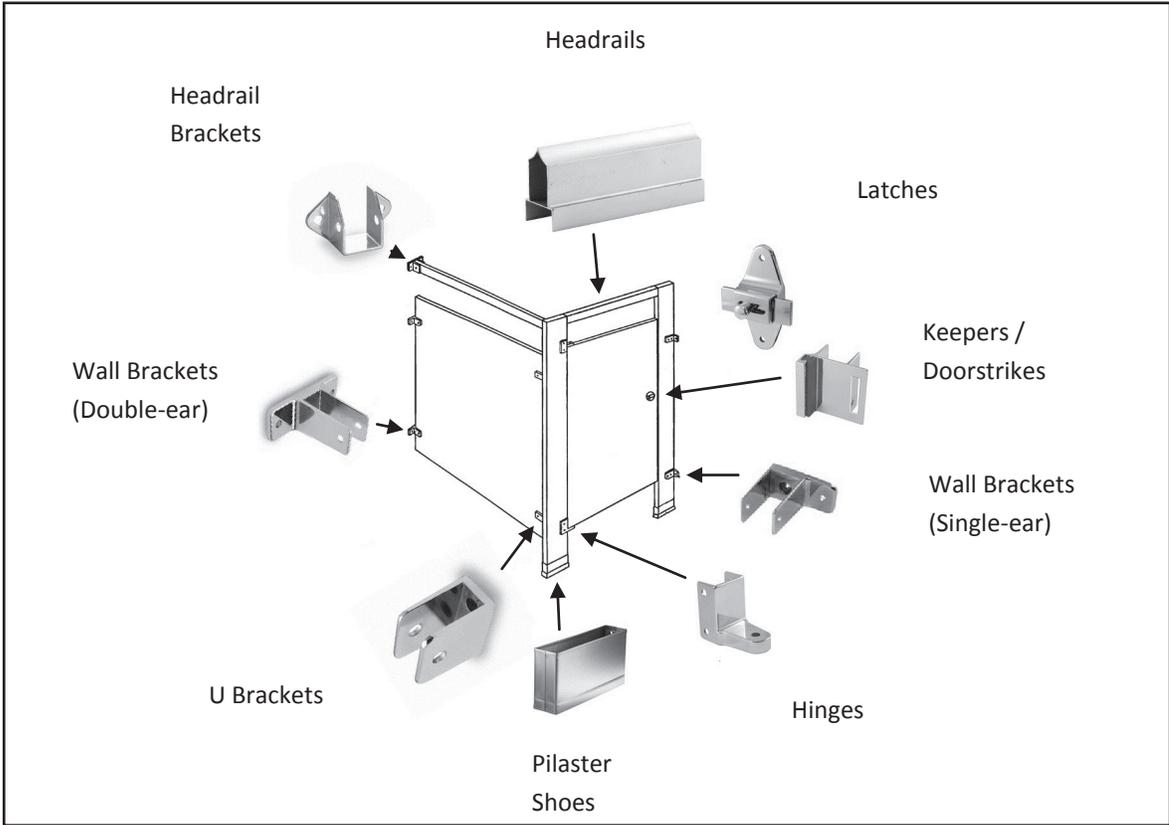
Splined Miter—Adhesive Bond



Installation Partitions

Hardware

Partitions typically involve visible hardware which becomes an integral part of the overall appearance. As a result of this contribution to the finished design, hardware styles and configurations vary greatly. Some of the most common elements in constructing a partition system include:



Due to the number of different manufacturers for these moldings, a product listing is not included in this publication.

Regardless of the type of hardware selected, the attachment system must be capable of supporting the weight of the panels as well as anticipated mechanical strain from dimensional change and application/use.

Product	Nominal Thickness Imperial (Metric)	Thickness Tolerance	Product Weight	Panel Description
Type 114	0.100" (2.54mm)	±0.012" (0.30mm)	0.745 lbs/ft ²	Sanded One-side
Type 514	0.100" (2.54mm)	±0.012" (0.30mm)	0.745 lbs/ft ²	Double-faced
Type 117	0.118" (3.00mm)	±0.012" (0.30mm)	0.886 lbs/ft ²	Sanded One-side
Type 515	0.125" (3.18mm)	±0.012" (0.30mm)	0.895 lbs/ft ²	Double-faced
Type 569	0.250" (6.4mm)	±0.0125" (0.32mm)	1.81 lbs/ft ²	
Type 571	0.312" (7.93mm)	±0.0156" (0.40mm)	2.26 lbs/ft ²	
Type 572	0.375" (9.6mm)	±0.0187" (0.48mm)	2.72 lbs/ft ²	
Type 568	0.500" (12.7mm)	±0.025" (0.64mm)	3.62 lbs/ft ²	
Type 575	0.750" (19.0mm)	±0.037" (0.94mm)	5.40 lbs/ft ²	
Type 590	1.00" (25.4mm)	±0.050" (1.27mm)	7.24 lbs/ft ²	

Installation Partitions

Most partition systems involve using “Thick Panel” compact (1/2” or thicker). The following guidelines may be helpful in determining the necessary hardware:

Divider Panels— (supported on two ends)

The maximum distance between bracket/fasteners is influenced by panel thickness and size (span). When fastening on opposing ends of a panel, always allow a minimum 6” distance from the upper/lower edge unless 3 or more fasteners are used. (see illustration 10A)

Type 568		Type 575+	
≤48”	≤60”	≤48”	≤60”
2 per	3+ per	2 per	3+ per
6”	4”	6”	4”

Top/bottom brackets should be at or near the minimum distance P. On 3+ bracket configurations, middle bracket(s) should be spaced equidistant.

Screens— (supported on one edge)

Product Type	Type 568+			
Panel Width	≤16”	≤18”		
Panel Height	≤20”	21-30”	31-36”	>36”
Brackets	2	2	3	4
Minimum Distance P	3”	4”	6”	

Hardware materials and designs vary. The recommendations above are suggestions solely based on the compact and does not assure that the specific hardware used will support the load and applicable stresses from daily use.

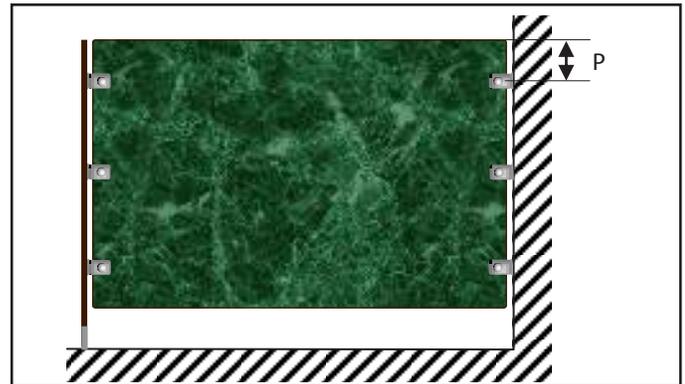
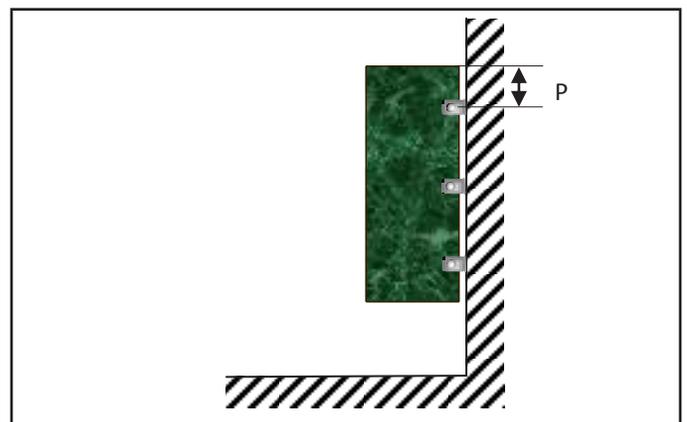


Figure 10A



Installation Wall Systems

The principles for installing HPL laminated panels will generally apply to the installation of Wilsonart Compact Laminate as well. However, due to the large range of product thicknesses available, the most appropriate method may be specific to accommodate the weight and mass.

There are two basic styles of Wilsonart Compact Laminate. Product types 114 and 117 are sanded on one side to facilitate bonding to a substrate. The other product types are manufactured double-faced or with a decorative surface on both sides of the panel in order to promote balance construction and minimize warping. Regardless of the style of Wilsonart Compact, some common suggestions apply to both, which includes:

Sanded one-side

These products are designed to be fabricated and installed like standard HPL products. The recommended substrate include particleboard & MDF. Other substrates may be used however; special considerations should be made to compensate for differences in dimensional characteristics. Please see the “Technical Bulletin—Substrate Selection” for more details on substrates. As with substrates, suitable adhesive types are typical of those recommended for laminates. These adhesive types include contact adhesive, PVA, polyurethane (PUR), epoxy, and various types of resins. For a complete list of adhesive types, refer to ANSI/NEMA LD 3-2005. Always refer to the adhesive manufacturers recommendations for proper application parameters for the specific adhesive selection.

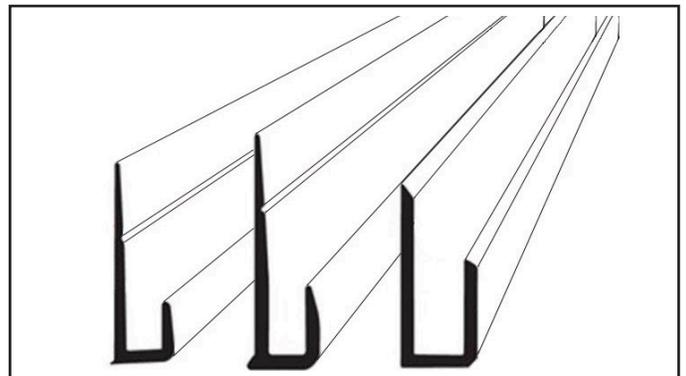
Double-faced

As indicated above, this group of product is manufactured with a decorative surface on both sides of the panel. This is necessary for balance in the composition and in many cases, allows the panel to be functional on both sides. These panels are normally installed by mechanical fastening in various ways.

Thin Panels (Compact panels up-to 1/4” nominal) - Can be perimeter fastened with edge moldings. The most common selections would include aluminum extrusions (see molding supplier list for source details on page 16). Because this system only involves restraining the edges, it is recommended to design the system with smaller panels so that dimensional change is limited. Some of the moldings that can be employed for this system include:

- **J-Channel**—This aluminum extrusion is designed to “cap” the unfinished edge of a panel were the system ends (examples: top edge, bottom edge, end of run). The molding is designed with a single flange that can be mechanically fastened making the flange/fasteners hidden behind the panel system. The low profile design of this molding makes it possible to cover lower edges with commercial vinyl base.

Note: Wilsonart Compact panels are primarily composed of wood fiber. Therefore, dimensional characteristics are influenced by humidity change. These dimensional characteristics should be accounted for when planning an installation.



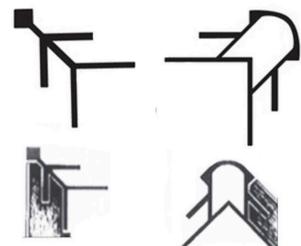
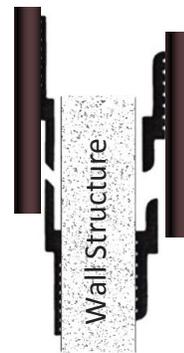
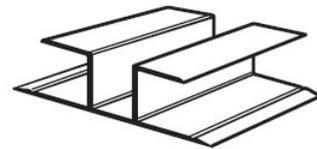
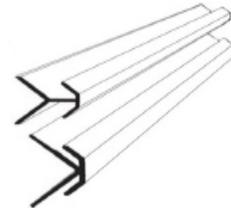
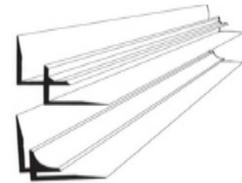
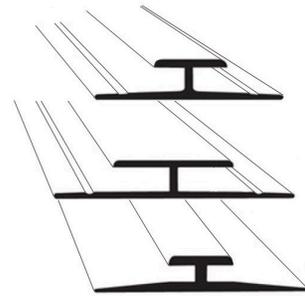
Installation

Wall Systems

- **H-Molding**—This molding is designed to restrain the edges of butt-jointed panels and provide expansion/contraction allowances. There are many style/color/material options to help with the aesthetics on the installation. The base flange is typically wider than the exposed flange which allows for mechanical fastening. When installing, be certain to allow clearance for dimensional change in the Compact.
- **Inside Corner Molding**—This molding is designed to fasten and maintain alignment where panels meet at an inside corner. These can allow dimensional change to occur in the panel while covering the required expansion.
- **Outside Corner Molding**—This aluminum extrusion is designed to receive two panels at an outside corner. In most cases, the outside corner is chamfered to eliminate the sharp corner. Some variations involve splines to restrain thicker panels and utilize an aluminum “bead” at the corner.

Thick Panels (Compact panels > 1/4” nominal) - Thick compact can also be perimeter fastened with edge moldings. In addition to the moldings listed for thin panels, additional options are available to provide additional support and/or different aesthetics. These moldings include:

- **U-Channel** (or Omega profile)—This aluminum extrusion may be with or without flanges. It is designed to overlap the edge of adjacent panels leaving a recessed area between the compact which is also where the molding is fastened. A decorative insert is sometimes used to cover the visible fasteners.
- **Z-clips**—This extrusion is used behind the panel and usually is installed in multiple pairs. While primarily used on thick panels installed with mechanical fasteners, it is plausible to bond strips to the back of thinner compact if a suitable adhesive is used. A Z-clip system involves installing rows of moldings on the wall structure (lip-up) and strips/clips on the back of the panel (lip down). Once the panel is “dropped” into place, blocking at the top of the panel keeps the compact from being removed.
- **Specialty Outside/Inside Corners**—There are several variations of corner moldings that allow panels to be splined to an aluminum extrusion to finish an outside corner. Since the edge of the Compact is visible at the spline, chamfering and finishing is necessary when using this type of molding.



Installation Wall Systems

Wall Preparation:

- Walls should be pre-inspected to determine if it is flat enough for direct clip installation.
- In cases of extreme deviation from plane, 1" X 4" lathe and shims may be necessary.
- If sufficiently flat, install inside corners (optional) and J-channels at base of wall.

Z-clip installation:

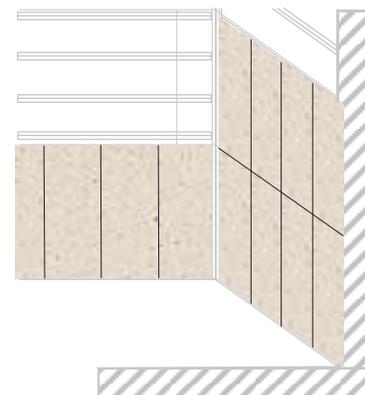
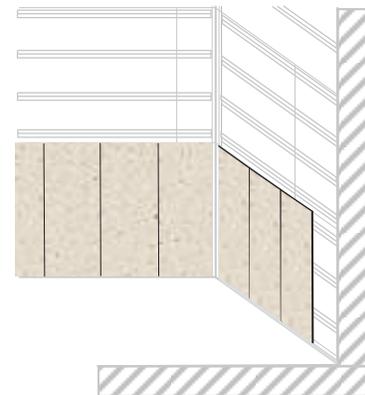
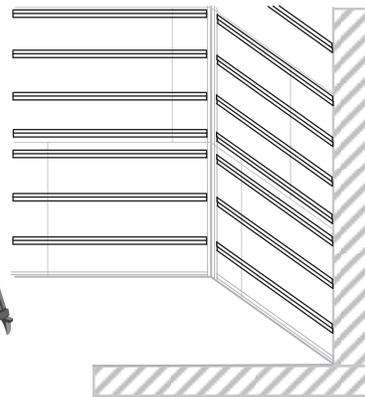
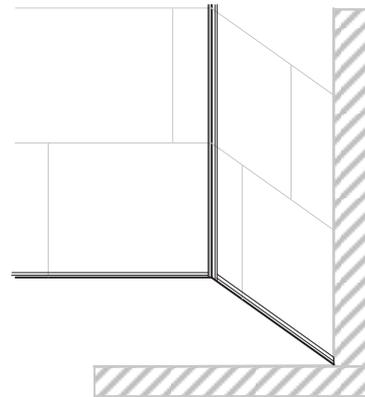
- Using a scope or laser leveler, lay-out and attach Z-clip strips on wall using appropriate mechanical fasteners .
- Vertical spacing is typically 16" - 24" depending on the thickness of compact and/or panel size.
- For slight variations in plane, directly shim strips to plumb.
- Top and bottom rows of Z-clips/strips should be positioned within 6" of their respective edge.
- Allow space at top of wall for furring strip. This strip limits vertical lift of the panels and allows top molding installation.

Panel installation:

- Machined panels should be fitted with clips corresponding to the desired vertical spacing (see page 14).
- Horizontal spacing of clips is typically 16" (max) with a minimum of 2 per row (dependent on width of panel).
- Edge/reveal designs vary greatly and will determine the specific sequence for panel installation.
- For multi-row installations, lower rows are installed first in order to allow panel clips to "drop" into strips.

Installation completion:

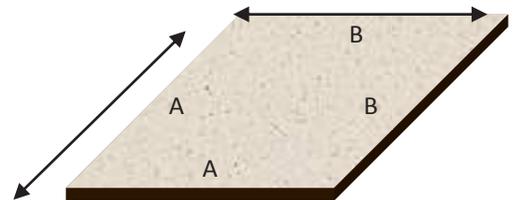
- Once panels are installed, install furring strip.
- Install applicable moldings.
- In some cases such as wainscoting, a slotted upper J-channel may be used to finish the upper edge.



Installation Wall Systems

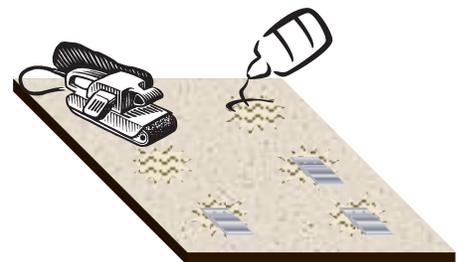
Panel Preparation:

- Panels should be cut to size with allowance for profiled edges or edge finishing.
- Since both sides of most compact laminates have the same decorative face, inspect both surfaces and confirm visual quality.
- Perform final machining and finishing.
- Lap stile joints should be paired appropriately on adjacent edge. (reference A, A, B, B and Lap Joint illustration below)



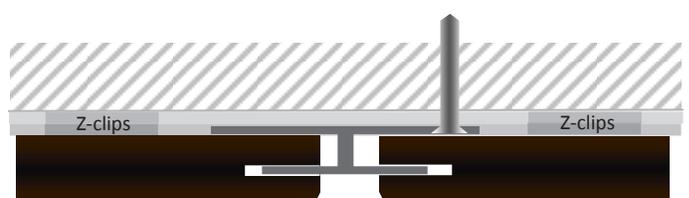
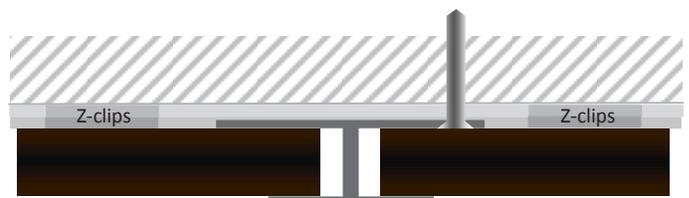
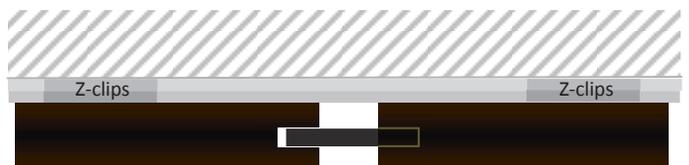
Z-clip installation:

- Lay-out and install Z-clips.
- Mechanical Fasteners should not penetrate beyond 1/8" of the outer (opposite) face. Pilot drilling can be within 1/16" of outer face.
- When using suitable adhesives, belt sand (with 50-80 grit) the bonding location to create an aggressive scratch pattern. *Note: This method should only be used with thinner, smaller panels at the lower portion of the walls. Insure that the Z clips are secure before installation, to prevent the panel from falling. Do not bond directly to a factory finish as delamination may occur.*



Joint options for wall panels include:

- Lap Joint (Rabbeted)
(Expansion/Contraction requirements must be observed for each panel)
- Splined Reveal (fixed one side)
(Expansion/Contraction requirements must be observed for each panel)
- H-molding (fixed one side)
(Expansion/Contraction requirements must be observed for each panel)
- H-molding Reveal (fixed one side)
(Expansion/Contraction requirements must be observed for each panel)



Installation

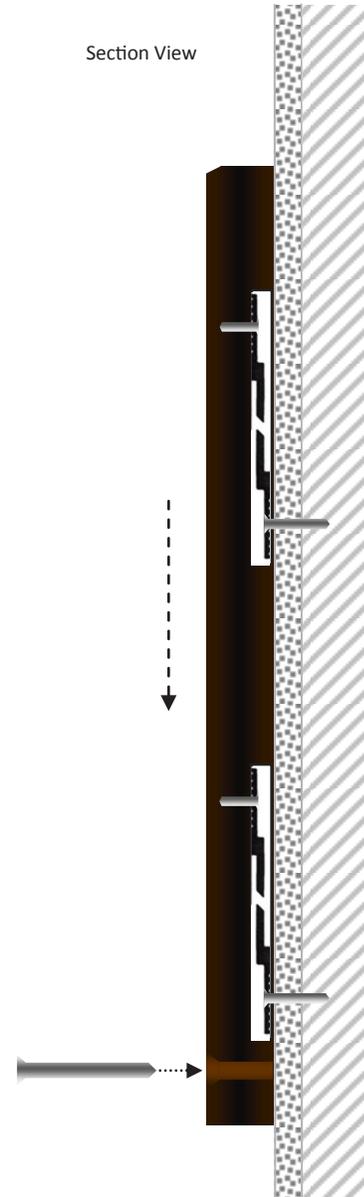
Protective Panels

Some special applications (small, single-panel configurations) require specifically placed protective panels such as hospital headboards, gurney (kick) panels, and cafeteria tray-guards.

For these applications where a partial panel is to be installed with limited exposed fasteners, the following method may be used:

- Machine recess into back-side of panel to accommodate Z-clips and strips. Recesses should be limited to small pockets sufficient to mount panels. Do not extend recess across the length of the panel as slight warpage may result.
- Fasteners should not penetrate beyond 1/8" of the outer surface.
- Wall/structure surface should be flat within the installation area. If shimming is required, the recessed area should compensate for the overall thickness of clips/shims.
- Once the panel is "dropped" into place, a single re-straining fastener can be placed to keep the panel from lifting off of the clip system.

This method is only suitable for thick panel ($\geq 1/2"$) applications. Due to the rigidity of the panels, it is extremely important that panel size be limited and subsurface be flat.



Suppliers for aluminum and plastic extrusions include:

- Brunner Enterprises—877.299.2622—www.brunnerent.com
- Extrude A Trim—888.557.0883—www.extrude-a-trim.com
- Futura Industries—800.824.2049—www.futuraind.com
- Outwater Plastics—800.631.8375—www.outwater.com

The molding suppliers listed above are for reference only and are not exclusive to Wilsonart Compact Laminate. Other manufacturers of suitable moldings may be available in your area.

Z-Clips

Product/Thickness	Brunner Enterprises	Extrude A Trim	Futura Industries	Outwater Plastics
Type 114 0.100"				Clips - ALU111-2-M, ALU112-2-M, ALUHAC23-2-M, ALU211-2-M, ALUHAC22-2-M, ALUHAC4049-25-M / See catalogue for corresponding mounting bars.
Type 514 0.100"				
Type 117 0.118"				
Type 515 0.125"				
Type 569 0.250"	Z-Clip / Z31603 (mounting bar)	FR0130PC / FR0130	350072	
Type 571 0.312"				
Type 572 0.375"				
Type 568 0.500"				
Type 575 0.750"				
Type 590 1.00"				

H Molding

Product/Thickness	Brunner Enterprises	Extrude A Trim	Futura Industries	Outwater Plastics
Type 114 0.100"				ALU5044-S
Type 514 0.100"				
Type 117 0.118"			442057	
Type 515 0.125"				ALU849
Type 569 0.250"	G850/G849	FR2131	443010	ALU850
Type 571 0.312"		FR6131		
Type 572 0.375"	G855/HU374			
Type 568 0.500"	HU500	FR1131		ALU1850
Type 575 0.750"	HU750	FR3131		
Type 590 1.00"				

J Channel

Product/Thickness	Brunner Enterprises	Extrude A Trim	Futura Industries	Outwater Plastics
Type 114 0.100"		FR330		ALU0214-S
Type 514 0.100"				
Type 117 0.118"			409105/409110/	
Type 515 0.125"	G55	FR0430	442086/442085	ALU7441-S
Type 569 0.250"	G851/G1244	FR0132/FR1132	409956/409955	ALU851/ALU961
Type 571 0.312"		FR2137	350017/350018	
Type 572 0.375"	G1275	FR2135	334190	
Type 568 0.500"	G1251	FR2136		ALU1851
Type 575 0.750"		FR2138		
Type 590 1.00"				

Inside Corner

Product/Thickness	Brunner Enterprises	Extrude A Trim	Futura Industries	Outwater Plastics
Type 114 0.100"				
Type 514 0.100"				
Type 117 0.118"				
Type 515 0.125"		FR0432		
Type 569 0.250"	G250	FR5130		ALU853
Type 571 0.312"		FR5140		
Type 572 0.375"				
Type 568 0.500"	G500			ALU1853
Type 575 0.750"	G750	FR4136		ALU1855
Type 590 1.00"				

Outside Corner

Product/Thickness	Brunner Enterprises	Extrude A Trim	Futura Industries	Outwater Plastics
Type 114 0.100"				
Type 514 0.100"				
Type 117 0.118"				
Type 515 0.125"		FR0432		
Type 569 0.250"	G852	FR5130		ALU852
Type 571 0.312"		FR5140		
Type 572 0.375"				
Type 568 0.500"				ALU1852
Type 575 0.750"	G750	FR4136		ALU1854
Type 590 1.00"				