

C. Moulding and Millwork

Technical Bulletin C-2

Fastening Cellular PVC Trim

All cellular PVC trim, no matter what brand label it carries, will expand and contract about $\frac{3}{16}$ " in an 18' length. If installed correctly, VERSATEX trim can give you a very aesthetically pleasing, finished look on your home. To help minimize expansion and contraction, certain steps should be taken to mechanically constrain the board. The following is a list of recommended steps you should consider adopting when installing long runs of VERSATEX PVC trim.

- 1) Fasteners with thin shanks, blunt points, and full round heads are preferred. The fastener must be long enough to penetrate the substrate a minimum of $1\frac{1}{2}$ ". The substrate must be the frame of the house, not the sheathing. In addition, the shank of the fastener must be strong enough to resist the movement in the trim. If you can bend the shank of the nail with your hands it is more than likely too thin. 12 gage stainless steel fasteners are recommended. Galvanized fasteners have a tendency to lose their coating during nailing and may lead to rust stains appearing on the VERSATEX Trimboards.

Gauge	Inches
12	0.1055
11 $\frac{1}{2}$	0.0133
11	0.1205
10	0.1350
9 $\frac{1}{2}$	0.142

- 2) Fasteners should be placed no closer than $\frac{1}{2}$ " from the outside edges of the product. An aggressive nailing schedule (maximum 16" on center or less) is recommended to mechanically constrain the board, and to help mitigate expansion and contraction. Bonding the trimboard to the substrate can also help to further reduce movement in the board.

- 3) To help reduce expansion, you may choose to use the number of fasteners across the width of the board as shown in the schedule below. Typically fasteners should be spaced approximately 3" on center.

Nominal Board Width	Fasteners per Width Board Width
4 and 6	2
8 and 10	3
12	4
16	4 or 5

- 4) Install fasteners no more than two inches from the end of each board.

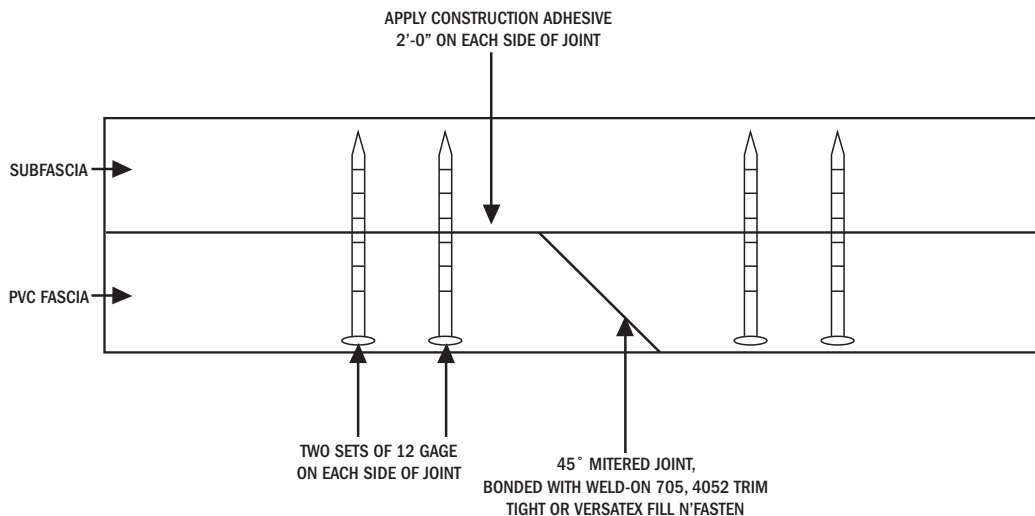
- 5) Bond joints between pieces of VERSATEX to eliminate separation.

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- 6) Bonded joints should be secured with a double row of fasteners on each side of the joint to allow for adequate bonding time. Use a scarf cut joint. Butt joints are not recommended. The VERSATEX trimboards should be reinforced with construction adhesive on the back side of the board about 2' - 0" on each side of a joint.



- 7) Use a UV resistant acrylic based, polymer based, or polyurethane caulk to fill any gaps between boards for appearance. Recommended sealants include #900 Solar Seal by NPC sealants, sidewinder by DAP, Quad and H24 by OSI and 2300 by GEOcel.
- 8) Pre-drilling typically not required unless large shank fasteners are used or the product is installed when the outside temperature and the temperature of the board is 40°F or lower.
- 9) Product that cannot be face nailed in accordance with our recommended on center spacing may require more room to accommodate expansion.
- 10) If you prefer to use a sealant rather than a bonded joint between boards, utilize a bevel or shiplap joint, leave a full $\frac{3}{16}$ " gap when installing on a day where temperatures range from approximately 30°F to 50°F.
- 11) If using a sealant rather than a bonded joint between boards, utilize a bevel or shiplap joint and leave a very small gap sufficient in size to accept the sealant when installing on a day when temperatures range from approximately 80°F to 100°F. Consult the sealant manufacturer for minimum gap spacing between boards.

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- 12) If picture framing VERSATEX to form a window surround miter cut the boards bonding the miter corner with a PVC adhesive such as Weld-On 705 or 4052 by IPS and pocket screw the miters to strengthen them. Secure the unit with fasteners to the frame of the structure, as you would any wood trim.
- 13) If gun nailing, set the pressure to between 70 and 100 psi. The pressure will be dependent upon the type of gun, the type and thickness of nail, ambient temperature, and the substrate the nail must penetrate. Be careful not to over drive the nail into the trim.
- 14) VERSATEX boards and sheets can be fastened using a variety of screws and nails. The following is a list of recommendations for fastening VERSATEX.

Nailing VERSATEX

VERSATEX boards can be nailed just as you would wood using hammers or power nailing equipment. The recommended nails are a 12 gage, annular threaded or spiral type preferably 304 stainless steel. Fasteners with thin shanks, blunt points, and full round heads are preferred. Standard steel nails and some galvanized nails will rust staining or discoloring the product which is why stainless steel is preferred. The fastener must be long enough to penetrate into the substrate behind VERSATEX a minimum of 1 1/2". To prevent cracking fasteners should be placed no closer than 1/2" from the edge of the product. An aggressive nailing schedule (maximum 16" on center) is recommended for secure holding, and to help mitigate expansion and contraction bonding the trimboard to the substrate will help to further reduce expansion and contraction. To avoid a build up of stress in the board which could cause them to become wavy, it is recommended that fastening begin on one end and proceed towards the other or from the middle working towards each end. Pre-drilling is not required unless large fasteners are used or the product is installed at cold temperatures. The impact properties of VERSATEX diminish with low temperatures.

Power nailing equipment can be used to fasten VERSATEX to the intended substrate. The recommended pressure setting will depend on the type of gun, type of nail used, ambient temperature and substrate density. Care should be taken not to overdrive the nail into VERSATEX. Excessive driving force can cause cracks to develop in the product.

Ring shank fasteners are not required for a secure hold into the substrate. Nails are designed with shanks in order to withstand the pressure of wood swelling and shrinking with fluctuating moisture content. The seasonal movement of wood is primarily in thickness. The shanks create additional holding power into the substrate against this outward force. Expansion and contraction of VERSATEX PVC is almost entirely in length. Any variation in thickness will be insignificant, and measured in thousandths of an inch. There is no outward pressure away from the substrate to be considered when selecting a fastener. The holding power of a smooth shank nail is more than adequate for all VERSATEX products. The reason ring shank fasteners are not approved for use with VERSATEX is because the rings on the shank of the nail create excess frictional heat

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when penetrating the product which can lead to melting of the PVC. Repetitive strikes of a hammer especially in colder weather can cause the PVC to soften followed by rapid cooling which allows material to build up on the nail since the rings are of a greater diameter than the point. If the cooling happens before the nail passes completely through the board into the substrate, the melted PVC can form into an awkward shape that cannot efficiently exit the smooth surface of the board. The result can be excess material break out at the point of impact and possible cracking or fracturing.

Securing VERSATEX with Screws

When securing VERSATEX with screws it is recommended that wood or deck screws with coarse threads be used a 305 stainless steel #7 finishing B/B screw painted white is a good choice. Large diameter screws and cold temperatures may require pre-drilling to prevent cracking. Stainless steel screws are preferred but hot dipped galvanized screws are also acceptable.

Standard steel screws and some galvanized steel will rust staining or discoloring the product. To prevent cracking screws should be placed no closer than $\frac{1}{2}$ " from the edge of the product. An aggressive fastening schedule (maximum 16" on center) is recommended for secure holding, and to help mitigate expansion and contraction bonding the trimboard to the substrate will help to further reduce expansion and contraction. To avoid a build up of stress in the board which could cause them to become wavy, it is recommended that fastening begin on one end and proceed towards the other or from the middle working towards each end.

Screws should be tightened until a snug fit is obtained. Over tightening may cause poor or unacceptable hold strength due to strip out of the fastener.

Stainless steel screws with a white painted head are available through Swan Secure Fasteners, www.swansecure.com and Starborn Industries, Inc., www.headcote.com.

Please see our installation instructions available on our website at www.versatex.com, for additional fastening recommendations.