



SAGIWALL INSTALLATION GUIDELINES

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INTRODUCTION

This guide has been prepared and intended for individuals with moderate to extensive knowledge of basic building practices. Appropriate protective eye wear should always be used when cutting. Warranty may be voided if proper application and installation practices are not followed.

Although relatively simple to install, SAGIWALL requires compliance with some fundamental building practices for standard exterior cladding installations, described in this guide.

The information provided in this document is offered in good faith and believed to be reliable, but is made without warranty, express or implied, as to merchantability or fitness for a particular purpose. Readers should review this document in conjunction with their design professional's advice, construction drawings, manufacturer's technical literature, building code, and fire code. Sagiper North America Inc. does not assume any responsibility for reader's compliance with applicable laws and regulations.

NOTE: Where the terms "recommend" or "should" are used in this guide, the associated step is optional for installing cladding. The step represents an installation best practice. Where the terms "required" or "must" are used, the associated step is a necessary part of the installation process and must be followed.

SAGIWALL Features and Properties

SAGIWALL boards are extruded PVC, which is a thermoplastic resin and is one of the most widely used plastics in the world. PVC is highly resistant to cracking, twisting, and warping. Unlike wood, it will never rot or support mold or mildew, and is also impervious to insects.

SAGIWALL Boards

SAGIWALL boards are available in a 6" (150 mm) channeled groove profile, similar to a traditional wood Tongue & Groove or Lap siding board profile. The panels come in 12' (3660 mm) and 19' (5790 mm) nominal lengths.



Figure 1, SAGIWALL Board Profile

SAGIWALL Accessories

Sagiper offers SAGIWALL accessory profiles that enable the project to be completed that are coordinated, color matching, and specifically designed for SAGIWALL boards.

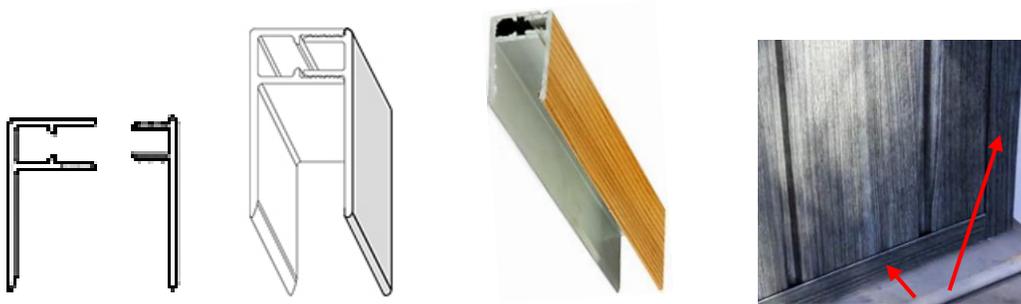


Figure 2, J-Mold Trim

2-piece trim, aluminum with decorative film, 1 3/8" (35 mm) x 12' (3,660 mm) long and 19' (5,790 mm) long, composed of female base trim and male finishing cap.



Figure 3, H-Mold Trim

2-piece trim, aluminum with decorative film, 2 3/8" (60 mm) x 12' (3,660 mm) long and 19' (5,790 mm) long, composed of female base trim and male finishing cap.



Figure 4, Outside Corner Trim

2-piece trim, aluminum with decorative film, 1 3/8" (35 mm) x 1 3/8" (35 mm) x 12' (3,660mm) long and 19' (5,790 mm) long, composed of female base trim and male finishing cap.



Figure 5, Starter Strip

1-piece accessory, aluminum, ½" (13 mm) x 5/16" (8 mm) x 1 3/8" (35 mm) x 12' (3,660 mm) long and 19' (5,790mm) long



Sagiper Touch-Up Pen

WARNINGS AND SAFETY

Fire and Heat Sources

- All PVC products can be damaged by excessive heat. Keep a safe distance between SAGIWALL and heat sources, such as fireplaces, barbeques, and fire pits.

Protection of Installer

Wear and use appropriate Personal Protective Equipment (PPE), take all necessary precautions to protect eyes, wear gloves as required to protect from sharp edges and corners. If exposure to air-borne particulates occurs wear an appropriate dust mask. The OHS Code describes further requirements.

GLOSSARY

Casing: Molding used to trim door and window openings at the jambs. Also referred to as "window surround", "door surround", or "brickmold".

Channel: The recessed area of an accessory trim piece, where cladding boards are inserted. Channels can also refer to the entire trim piece itself, and are named for the letter of the alphabet their profile resembles (e.g., J-mold trim/J-trim, H-Mold Trim, etc.).

Course: A single row of boards, running the full length of the building; or in the case of a vertical installation, from top to bottom.

Drip Cap or Head Flashing: Horizontal flashing or a similar accessory, located over exterior door or window frames to divert rainwater away from the building.

Face: The visible side of a board once the board is installed.

Face-Nailing: The action of fastening directly through the “face” side of a board (instead of nailing through the hem slot). Face nailing is NOT recommended for SAGIWALL installations.

Flashing: A thin, impervious material (often metal) located around exterior wall openings, windows, doors and under/behind J-mold trim, to shed the draining water away from the building.

Mitre: A diagonal cut, beveled to a specific angle (usually 45°). Sometimes miter cuts are made to cladding or soffit boards, to provide a neater installed appearance.

Nailing Flange or Hem: The section of board or accessory where the fastening slots are located.

Rain Screen: A method of constructing exterior walls with the cladding separated from the wall membrane by an airspace. The airspace allows pressure equalization to prevent wind driven rain from being forced inwards. A rain screen consists of a sheathed exterior wall, an applied weather-resistant membrane, a cavity (void space) that is typically created through with vertical furring strips, and exterior cladding on top of the furring.

Rip Cut: A cut made lengthwise on a board or trim.

Shim: A minor building material used to create a consistent plane on an uneven substrate, prior to installing cladding boards or accessories. Also used to level or plumb a product during installation.

Soffit: The material used to enclose the horizontal underside of an eave, cornice, or overhang.

Starter Strip or Trim: An accessory applied to the building, and used to fasten the first course of cladding on to the building.

Water-Resistive Barrier: A material applied between the building sheathing and the cladding that is intended to resist any water that penetrates through the cladding. The minimum required properties are described in the applicable building code for the project site.

TRANSPORTATION AND STORAGE

Transportation

When transporting Sagiper products, keep the boxes flat, and support them along their entire length. When products arrive at the project site, inspect materials for accidental damage. Damaged products should not be installed. All damages must be noted on the Bill of Lading (BoL).

Storage

Store the boxes on a flat surface and support the entire length of the boxes. Keep the boxes dry. Store the boxes away from areas where falling objects or other construction activity may cause damage. Ensure the stacks of boxes are stable.

Warning

DO NOT store boxes in a location where temperatures may exceed 50°C (130° F) (e.g., on asphalt pavement during unusually hot weather or under dark tarps/plastic wraps without proper air circulation).

DO NOT store the boxes in stacks more than six (6) boxes high.

TOOLS AND EQUIPMENT

Recommended Equipment

- Rubber mallet
- Chalk line
- Tape measure
- SagiCement (PVC cement), optional
- Framers square
- Power drill
- Level
- Mitre saw, carbide blade with 80+ teeth

Warning

DO NOT use pneumatic nailing guns to fasten SAGIWALL boards. Pneumatic nailing guns frequently break the nailing flange and typically apply too much pressure to allow the boards to expand/contract freely.

FASTENERS

Screws

Use an appropriate length, hot-dip galvanized steel or stainless steel screw to fasten the boards through the centre of the pre-drilled nailing flange (fastening slots) to allow for the board horizontal expansion/contraction.



Figure 6, Pan head screw and Self-tapping wafer head screw

- Select screws with length to penetrate 1¼" (32 mm) into solid wood minimum. Pan head screws are recommended for SAGIWALL boards. Wafer head screws are recommended for aluminum trims.

Warning

DO NOT use glue or adhesives of any kind to fasten the strapping or SAGIWALL boards. DO NOT use staples for exterior installations.

DO NOT use electroplated galvanized fasteners. The lifespan of SAGIWALL is extremely long and the fasteners must have at least the same lifespan as the boards.

PREPARATION

Allow SAGIWALL boards and accessories to completely acclimate to the outside temperature before beginning installation.

Shimming

Verify all wall substrates are plumb, square, and even across their surfaces. If a wall sheathing is uneven, install shims to create a flat consistent substrate for the SAGIWALL.

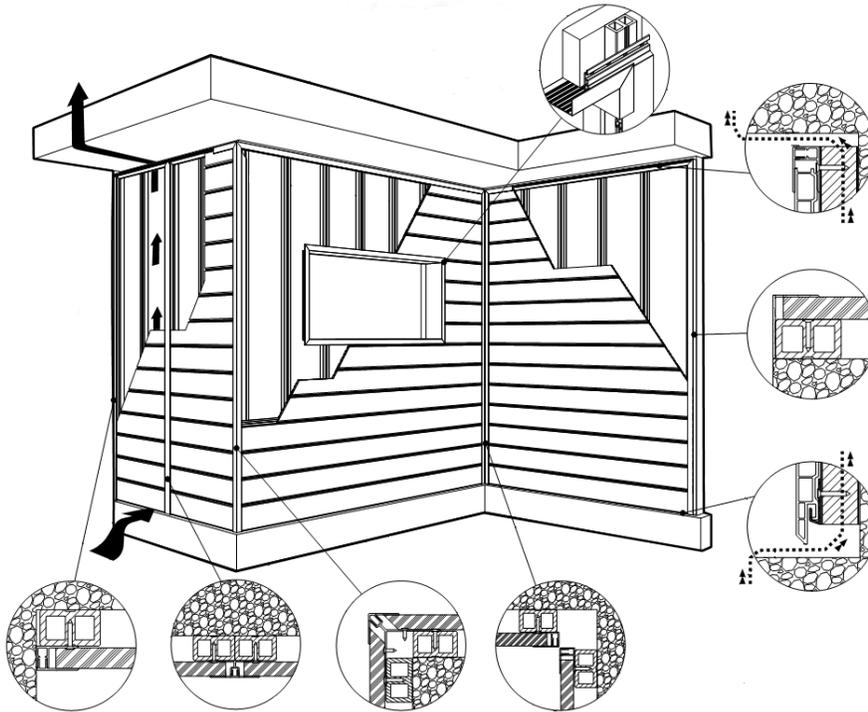
Board Preparation

The factory board ends of most SAGIWALL boards have minor alignment differences. Sometimes the decorative film is shorter or longer than the board core. Prior to installation, remove the excess film or remove the uncoated portion of the board. Boards are always slightly longer than specified length to account for this condition.

Randomized Board Patterns ***IMPORTANT***

SAGIWALL BOARDS ARE MANUFACTURED FROM A LARGE REPEATING PATTERN (48" X 48"), AND ARE PACKAGED SEQUENTIALLY. A BEST PRACTICE IS TO RANDOMLY SHUFFLE THE BOARDS AT THE PROJECT SITE OR PRE-PLAN THE INDIVIDUAL BOARD LOCATIONS, TO MINIMIZE IDENTICAL BOARD PATTERNS LOCATED ADJACENT TO EACHOTHER. WHEN INSTALLING BOARDS ON FEATURE WALLS OR ON LARGE SCALE PROJECTS WITH VAST CLADDING AREAS, PERIODICALLY REVIEW THE BOARD PATTERNS FROM A DISTANCE TO ENSURE A RANDOM APPEARANCE.

GENERAL INSTALLATION CONSIDERATIONS



SAGIWALL can be installed directly over a variety of high quality weather-resistant sheet membranes. However, it is recommended that SAGIWALL also be applied over wood strapping or aluminum furring channel to allow for rain screen when installing horizontally in addition to a high-quality membrane.

If installing vertically, the SAGIWALL acts as its own rain screen due to its cellular cavities and ribbed backing, Drill small holes in the bottom of the J-Mold Trim to allow proper drainage, approximately 16" (400 mm) o.c..

Fasten every board to the strapping at 16" (400 mm) o.c..



Figure 7, Pressure treated wood strapping



Figure 8, Galvanized steel or aluminum furring channels

Maintain a minimum distance of 3/8" (10 mm) between the end of the SAGIWALL board and the respective accessory (outside corner, H-Mold Trim, or J-Mold Trim). An example is shown in [Figure 2](#) where the SAGIWALL board is finished with a J-Mold Trim.

Warning

Rigid foam sheathing as a fastening base for SAGIWALL is NOT recommended.

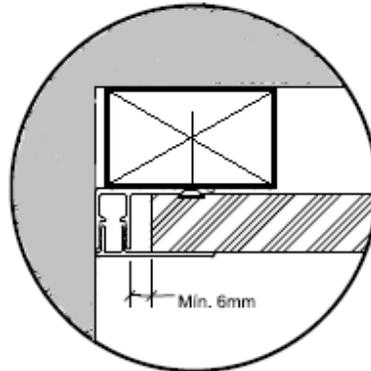


Figure 9, Plan detail of SAGIWALL perimeter trim (J-Mold Trim)

When going around doors, windows, or electrical outlets with Sagiper J-Mold Trim, it is recommended to miter the finishing cap butt joints. Use a colour matching Sagiper Touch Up Pen to colorize the mill cut ends.

Typically, join two board ends with an H-Mold Trim. Ensure board butt joints are made over solid wood or strapping to provide secure fastening. Before installation of a vertical H-Mold Trim, install vertical strapping with at least the same width as the H-Mold Trim, in order to later receive the female base of the H-Mold Trim (see [Figure 10](#)).

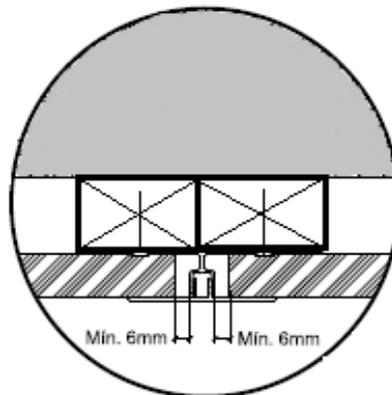


Figure 10, Plan detail at H-Mold Trim accessory

It is also recommended to “float” the screw to sit flush with the ridges either side of the pre-drilled fastening slot.

When installing the accessories, fasten the female base trim to the strapping first, then proceed with normal SAGIWALL board installation. Finally, the install the male finishing cap (see [Figure 3](#)) by gently hitting into place with a rubber mallet to achieve an aesthetically pleasing finish. A temporary smooth separating material may be used to distribute the impact force of the mallet, and prevent dents in the male finishing cap.

Important Temperature Considerations

Important: During the entire installation process, it's critical that each cladding component is allowed to freely expand and contract with the changes in temperature. Improperly installed components that restrict this expansion/contraction will buckle or warp. Unlike wood, SAGIWALL will not swell when exposed to moisture.

Where two walls meet at a corner, make a mitre cut at the SAGIWALL board ends, as shown in [Figure 11](#). Leave 3/8" (10 mm) to allow for thermal expansion, when installing in moderate to cool temperatures. If installing in warmer temperatures, it is important to be cognisant of thermal contraction and leave less than 3/8" (10 mm).

Give special consideration to any south facing SAGIWALL area that is exposed to high reflectance from large areas of light colored pavement. These areas may be exposed to higher seasonal temperature changes than the remainder of the building. Similarly, SAGIWALL areas exposed to high window reflectance may expand/contract more than other cladding areas.

Examples

- SAGIWALL boards have a coefficient of thermal expansion/contraction of $5 \times 10^{-5} \text{ m}/(\text{m}^\circ\text{C})$. As an example, in a city that has a seasonal high-low temperature range from -30°C to $+30^\circ\text{C}$, the cladding will be exposed to a typical temperature change of 60 degrees Celsius total. A nominal 19' (5,790 mm) long SAGIWALL board will experience a change in length seasonally of 11/16" (17 mm). This does not harm the product.
- Another example is with a temperature change of 28°C a 10' (3,050 mm) SAGIWALL board will change 3/16" (4.5 mm) in length. Keep in mind the temperature of the board at the time it is cut is a factor in the board's length on the coldest day and warmest day. In this example, if the board is initially cut outdoors (at -3°C) then that board can be expected to only expand, and won't contract. These are important considerations for the determining the appropriate gap allowance at board ends.
- SAGIWALL aluminum accessories have a coefficient of thermal expansion/contraction of $2 \times 10^{-5} \text{ m}/(\text{m}^\circ\text{C})$. As an example, in a city that has a seasonal high-low temperature range of -20°C to $+28^\circ\text{C}$, the cladding will be exposed to a typical temperature change of 48 degrees Celsius total. A nominal 19' (5,790mm) long SAGIWALL J-Mold Trim will experience a change in length seasonally of 1/4" (6 mm). This does not harm the product. The temperature of the board at the time it is cut is a factor in that board's length on the coldest day and warmest day.

If the distance between the corner and the last fastening point is significant, install a screw in the closest pre-drilled fastening slot to the corner of the wall.

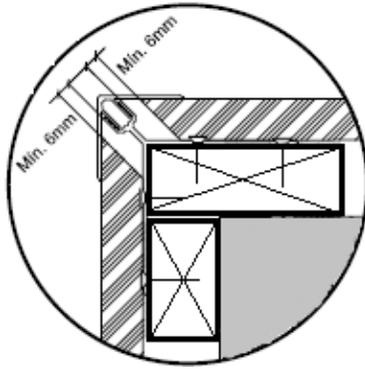


Figure 11, Plan detail at outside corner with Outside Corner Trim

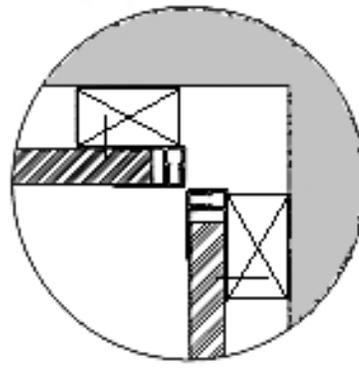


Figure 12, Plan detail at inside corner with J-Mold Trims

Warranty Considerations

Material Compatibility Issues

All PVC products are incompatible with asphaltic products, and must never be in direct contact with each other. If these materials are accidentally in contact, compounds from the asphaltic material will leach into the PVC product and weaken and/or discolor the PVC product. If an asphalt material touches a PVC product, it must be cleaned immediately or the surface could be permanently “stained”. Solvents are not recommended for cleaning PVC. Fortunately, these situations are avoidable with proper planning, are not valid cause for a warranty claim.

Code Compliance

The applicable Building Code and Fire Code are determined based on the project site location, and as there are many different codes in Canada and the USA, and as Building Codes are regularly updated, Sagiper North America can’t address all code related information in this guide. It is the responsibility of the project design authority, architect, installer, and/or contractor to understand the applicable code and install exterior envelope products in accordance with those codes. The requirements of local Building Codes must always be observed, as a minimum requirement. Some code related issues to consider include the following:

- The required flammability qualities of cladding materials are indicated in building code. The most current test results of Sagiper products are available on their website www.sagipernorthamerica.com.
- For small buildings/residential the minimum distance from the lowest SAGIWALL board to grade is indicated in the building code.

Ventilation with Rain Screen

Vertical furring installed on top of the building air barrier membrane is recommended to provide a “rain screen” and a vented space to facilitate drying.

Leave a minimum clear space of 3/8” (10 mm) between the lowest edge of the SAGIWALL board and the exterior finished grade, decking, or concrete (see [Figure 14](#)). Local Building Code requirements may require a larger distance. Also, leave a minimum clear space of 3/8” (10 mm) between the uppermost board and the underside of the soffit (see [Figure 13](#)), so that the cladding remains ventilated.

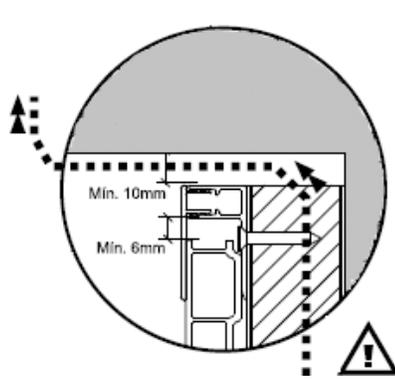


Figure 13, Section detail at Wall-to-Soffit

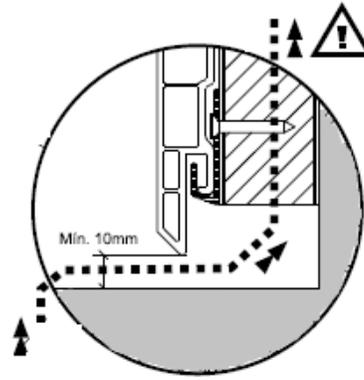


Figure 14, Section detail at Wall-to-Exterior Deck

The figure below illustrates horizontal SAGIWALL boards. The dashed line indicates the ventilation pathway, and the SAGIWALL boards are fastened to the vertical strapping.

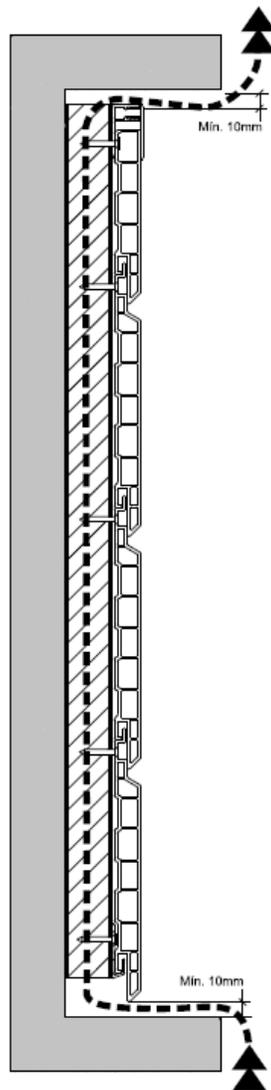


Figure 15, Section detail at wall assembly with horizontal boards

Cutting SAGIWALL Boards

All PVC is softer in warmer temperatures and more brittle in colder temperatures. Generally, in colder temperatures push circular saws more slowly to avoid chipping the board. Use a carbide blade with 80+ teeth.

Flashing and Penetrations

Proper flashing at windows, doors, penetrations in cladding, and similar interruptions in cladding are critical to an exterior wall assembly. The focus of this guide isn't flashing recommendations, and is the responsibility of the project's design authority and local Building Code.

Installation at Corners

Where two walls meet at a corner, make a mitre cut at the SAGIWALL board ends, as shown in [Figure 12](#). When installing in moderate-to-cool temperatures, leave 3/8" (10 mm) to allow for thermal expansion. When installing in warmer temperatures, it is important to be cognisant of thermal contraction and leave less than 3/8" (10 mm).

If the distance between the corner and the last fastening point is significant, a screw should be fastened in the closest pre-drilled fastening slot to the corner.

Refer to [Figure 12](#).

Special Installation Situations

Where it is desired to have board ends meet (a scarf joint) without an H-Mold Trim, there is only one acceptable method. As always, it is critical that the boards are allowed to freely expand/contract with weather temperature changes. When carefully pre-planned, it is acceptable to rigidly fasten one location per board course, and the board course will expand/contract from that one fixed point.

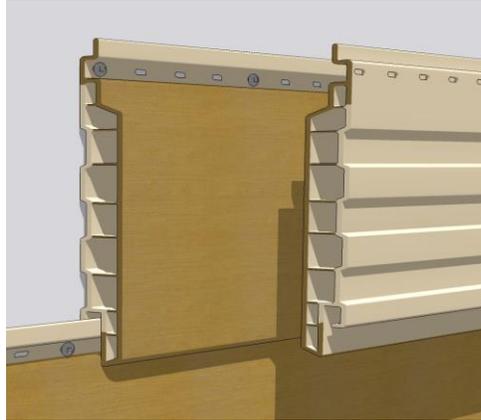
The following steps describe the acceptable butt joint procedure:

- 1) Make a mitre cut at the ends of two boards at opposite 45 degree angles (one at 45° and one at 225°), as per the figure below.

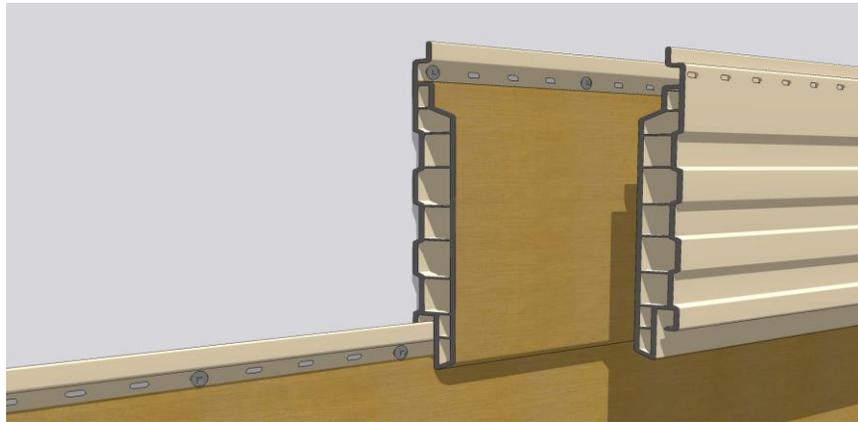


- 2) Remove any burrs, raised beads, or shavings from both board ends. Remove any dirt, grease, moisture, or other foreign material from both board ends.

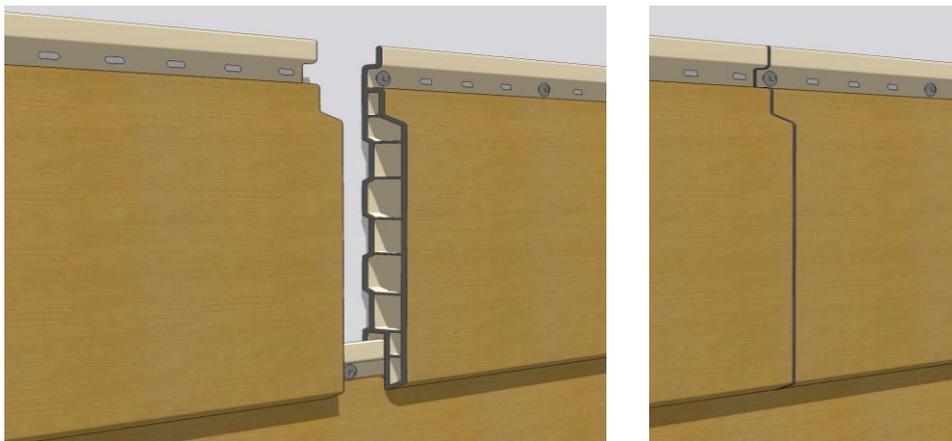
- 3) Use the color matched Sagiper Touch Up Pen on the cut ends of both boards.



- 4) Apply SagiCement (PVC cement) generously and quickly on the board cut ends. Cover all the corrugations with SagiCement. Do not allow any cement to dry before connecting the boards.



- 5) While the cement is still fluid, slide the panels together to overlap each other. Once the panels are flush against one another, hard fasten through the PVC nailing flange as close to the scarf joint as possible. Wipe off excess cement from the board face promptly.



- 6) Handle the newly cemented joint carefully until initial set has taken place, which could be several minutes. before any further board handling occurs. SagiCement cures more slowly in colder temperatures.



HORIZONTAL INSTALLATION AT EXTERIOR WALLS

Step 1

Place a level guideline with chalk around the entire building, where the Starter Strip will be installed.

Step 2

Install Starter Strips at the bottom of all the cladding areas. Confirm the Starter Strips are not fastened too tightly, and can freely move horizontally. If the J-Mold Trim is used in lieu of the Starter Strip, drill drainage holes in the bottom of the J-Mold Trim at 16" (400 mm) o.c..

Step 3

Install flashings at all windows, doors, louvers, electrical boxes, hose bibs, wall mounted light fixtures, and at other penetrations of the cladding.

Step 4

Install all the Outside Corner Trims. Where more than one Outside Corner Trim is required on a single building corner, provide a gap between trims to allow for expansion/contraction to allow for temperature changes. Do not install the male finishing cap at this time.

Step 5

Install H-Mold Trims vertically, located at the ends of each horizontal board, and allowing for proper expansion/contraction gaps. Do not install the male finishing cap at this time.

Step 6

Install J-Mold Trims at inside corners, where SAGIWALL boards abut other cladding materials, at the perimeter of windows, doors, and other materials penetrating SAGIWALL cladding. Do not install the male finishing caps at this time.

Step 7

Install the lowest course of boards on the Starter Strip and fasten through the middle of the slots. Install a few additional board courses, and check that the boards are level. Check the proper gap allowances are maintained at the ends of each board within each course. Check the ends of adjacent boards align horizontally (a board should not be noticeably higher or lower than the adjacent board).

Install the remaining boards. Every few courses check for level and that adjacent boards are aligned horizontally.

Warning

Installing a screw through a nailing slot at one slot end (rather than the slot middle) will not allow the board to properly expand/contract.

Step 8

Install the male finishing caps of the SAGIWALL trims.

VERTICAL INSTALLATION AT EXTERIOR WALLS

Installation recommendations for vertical installations are the same as horizontal installations, with a few extra considerations. When installing the SAGIWALL boards vertically, the Starter Strip is not required.

Step 1

Install flashings at all windows, doors, louvers, electrical boxes, hose bibs, wall mounted light fixtures, and at other penetrations of the cladding.

Step 2

Install all the Outside Corner Trims. Where more than one Outside Corner Trim is required on a single building corner, provide a gap between trims to allow for expansion/contraction to allow for temperature changes. Do not install the male finishing cap at this time.

Step 3

Install H-Mold Trims horizontally, located at the ends of each horizontal board, and allowing for proper expansion/contraction gaps. Do not install the male finishing cap at this time. Give consideration to where this trim will be located, relative to other significant wall features. It may be desirable to align this trim with other wall elements.

Step 4

Install J-Mold Trims at inside corners along base perimeter drainage holes should be drilled into the base of the female trim 16" (400 mm) o.c., where SAGIWALL boards abut other cladding materials, at the perimeter of windows, doors, and other materials penetrating SAGIWALL cladding. Do not install the male finishing caps at this time.

Step 5

Install the first vertical course of boards beginning at an Outside Corner Trim or J-Mold Trim, and fasten through the middle of the slots. One exception is at the uppermost fastener location of each vertical board, fasten through the uppermost end of this slot. This will allow for the board to expand/contract only downwards from this fastening point.

Install a few additional board courses, and check that the boards are plumb. Check the proper gap allowances are maintained at the ends of each board within each course. Check the ends of adjacent boards align vertically (a board should not be noticeably left or right from the board below).

Install the remaining boards. Every few courses check for plumb and that adjacent boards are aligned vertically.

Warning

Installing a screw through a nailing slot at one slot end (rather than the slot middle) will not allow the board to properly expand/contract.

Step 6

Install the male finishing caps of the SAGIWALL trims.

CARE AND MAINTENANCE

Although all cladding products will get dirty over time, a heavy rain will naturally clean most of it. SAGIWALL maintenance is very simple, needing only a simple cleaning with a sponge or damp cloth. When dirt has become noticeable wash it with an ordinary garden hose. Detergent or other types of non-abrasive cleaning products may also be used.

Before using any cleaning product, carefully read the cleaning product's instructions, and test it on a small inconspicuous area or on a scrap piece to see results.

Warning

SAGIWALL does not require any surface treatments, such as the application of surface sealers or coatings.

DO NOT use a stiff bristle brush or abrasive cleaner, which may change the gloss of the cladding.

DO NOT use abrasive products to clean SAGIWALL.

DO NOT use power washers for cleaning.

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