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FORMLINER

**V-Lite Plastic** Formliner

# Application GUIDE

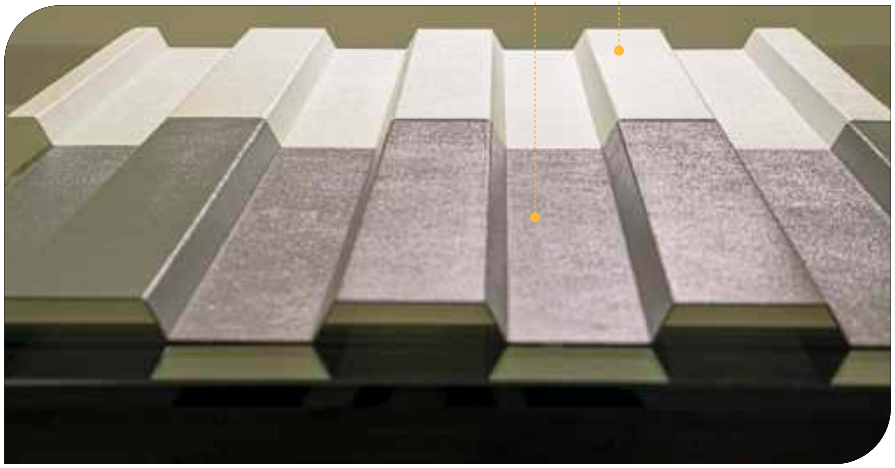
# **V-Lite Plastic** Formliner

## Application Guide

This application guide is intended for anyone who works with Custom Rock V-Lite formliners. The guide includes pertinent information you need to know to properly install and use the formliners.

## Two types of V-Lite formliners

- Single use plastic STY (white)
- Multi-use plastic ABS (gray)



STY and ABS are interchangeable on the same job and are suited for tilt-up, cast-in-place, and precast architectural concrete.

## Similarities

- Pattern - Made from same mold
- Thickness – Use similar raw material thicknesses
- May require additional backing – depending on pattern

# **Shipping** and Unloading

## Crates and transportation

Formliners are typically shipped enclosed in crates with an open top on LTL box trucks/vans, flatbed trailers, and/or conestogas (retractable covered trucks). The crates are long and wide. Our standard crate is approximately 126"x55" with varying heights (up to 48").

- Sales order number and number of sheets are labeled on the crates
- A packing list is in a pouch on the outside of the crate

**Check that the formliners received correspond to the packing list information and your sales order.**



**To avoid personal injury or product damage, formliners must be handled with the proper equipment, including long forks on lifts.**

## Damages during shipping

Check the crate and formliners for any damage due to transportation or improper handling.

**Failure to submit a damage claim when receiving the formliners will void any replacement or reimbursement by carrier.**

**Damaged crate, note broken skid, no sides to crate and banding used to hold formliner to skid**

Claiming damages (if shipped via Custom Rock)

1. Describe the damage on the shipping paperwork.
2. Inspect the formliners inside the crate and count the number of sheets damaged and note on shipping paperwork.
3. Take pictures of crate and formliners (if damaged).

Pictures and notation on the shipping paperwork are required to process claims and replacements. If this is not done, you may be responsible for the replacement costs.

Replacements: Custom Rock will work diligently to supply replacement sheets as quickly as possible. This will rely on the constraints of our schedule.

# Handling and Care

Custom Rock V-Lite formliners are sensitive to the effects of sunlight, ultraviolet rays, and extreme weather.

## Safety and care rules

- Formliner edges can be sharp, therefore gloves and any other required PPE equipment should be worn when handling.
- When not in use, keep the formliners indoors or cover them with a tarp or black plastic to keep the surfaces clean and extend the life of the formliners.
- Formliners should not be exposed to temperatures exceeding 140°F. Extreme temperatures might result in irreversible deformity.
- Do not hit the face of the formliner with anything heavy, sharp, or hot that could cause permanent damage.

# **Trimming** and Modifying

Custom Rock V-Lite formliners can be cut or changed to fit the architectural concrete projects' formwork and conditions.

## Trimming steps

1. Attach the formliner to a work bench or cutting guide surface with clamps.
2. Cut at a steady pace with a circular saw with a fine-tooth panel blade to avoid "chattering" and cracking the formliner. If preferred, you may use a table saw.
3. Sand down any rough or uneven edges of the formliner.

## Trimming formliner abutted to reveal

1. Trim formliner as described in trimming steps. Cut the formliner with the same angle as the side of the reveal to properly butt formliner to the reveal.

**Pro tip:**

- When cutting formliners with little relief (pattern depth), you can score them with a sharp knife and break apart.

# **Formliner** Attachment

## Step 1 – Attachment at the optimal temperature

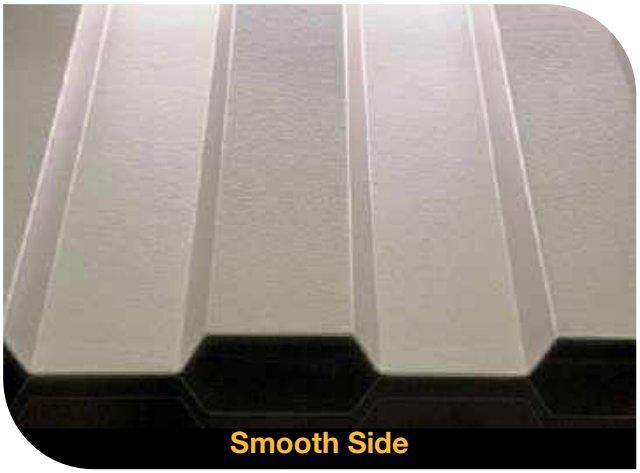
Plastic formliners can expand and shrink when the temperature changes. The size of the formliners will change by about 1/16" in 10' for every 10°F change in temperature.

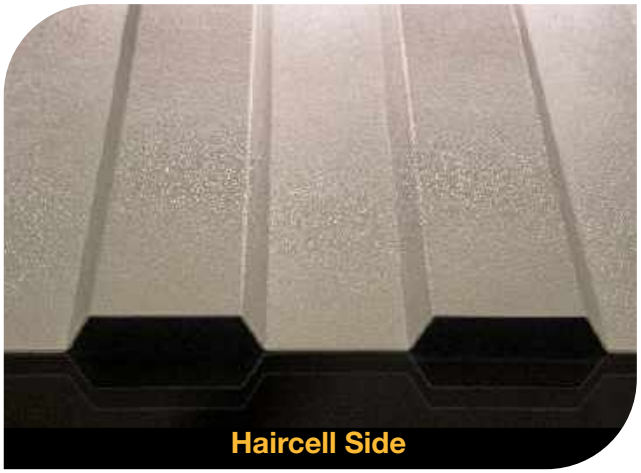
Formliners should be cut and attached in place when the air temperature is about the same as when the concrete will be poured, preferably during the coolest part of the day.

**Pro tips:** If the formliner looks like it's blistering across the surface between the fasteners, don't try to "chase" down the blister with more fasteners. This usually leads to concrete finishes that don't look good. Let the temperature go back to where it was when the formliner was attached. This will let the formliner cool down and flatten out again.

# Step 2A – Attaching the formliner to formwork for Cast-in-place and Precast application

A. Find the smooth side of the formliner and put it against the formwork. The textured (haircell) side is where the concrete is poured.


Smooth Side


Haircell Side

B. Make sure the formwork is level and square. Mark dimensions to square up edges, patterns, and joints.

C. Place one sheet at a time with the smooth side against the formwork and line up the edges and joints.

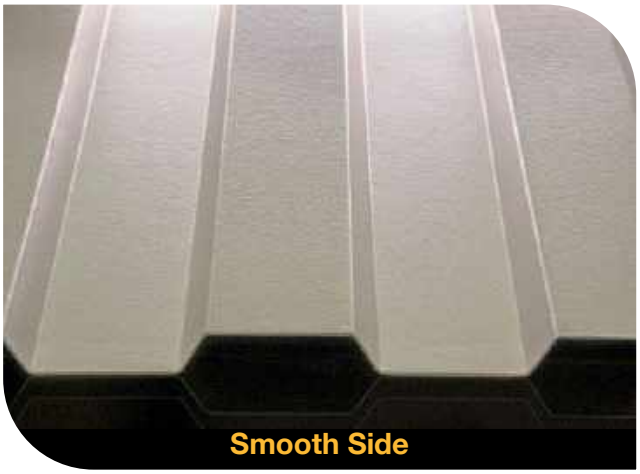
D. Attach the formliner to the formwork with screws, nails, or staples every 6” to 12” around the perimeter and every 18” to 24” in the center. Fasten the formliners at the lowest point of the relief that is closest to the substrate.

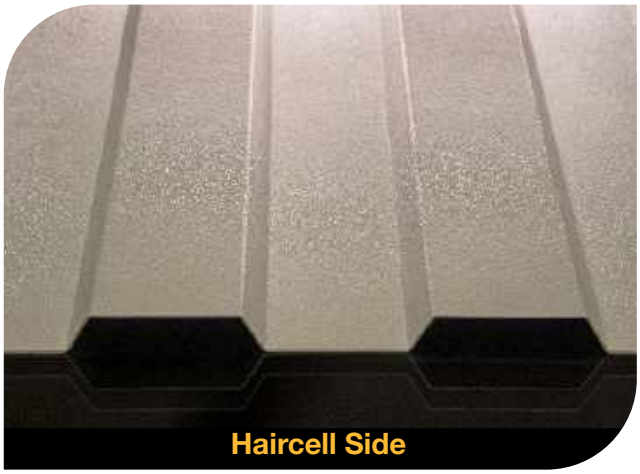
**Pro tips:**

- Pneumatic staplers provide a quick method for attaching plastic formliners. Use 7/16” crown staples with at least 3/4” legs. Ensure to adjust depth gauge on stapler to not damage formliner.
- Put caulk over the fastener to make it less noticeable.
- If you are using metal or aluminium forms, you might want to line them with 3/4” plywood so that you can attach the formliner to the wood instead of the metal.

## Step 2B – Attaching the formliner to concrete slab for Tilt-up Application

A. Find the smooth side of the formliner and put it against the casting slab. The textured (haircell) side is where the concrete is poured.


Smooth Side


Haircell Side

B. Make sure the casting slab is clean and has a flat, smooth surface.

C. Mark dimensions to square up edges, patterns, and joints.

D. Place one sheet at a time and line up the edges and joints.

E. Drill a hole in the formliner and the concrete.

**Pro tips:**

- When you drill into the slab, the hole will be surrounded by a pile of concrete dust. Make sure this is cleaned well. Keep formliner tight against the slab, while drilling, to keep any dust from getting trapped under the formliner. This can make a dimple on the finished surface of the poured concrete.

F. Put a dowel pin into the hole. (After the job is done, the dowels are drilled out and the holes are filled.)

G. Break the dowel off flush with the surface (if needed) and then use a large-headed roofing nail to hold the formliner in place.

H. Attach the formliner by spacing every 24” throughout the field of the pattern. Fasten the formliner at the lowest point of the relief that is closest to the substrate.

**Pro tips:**

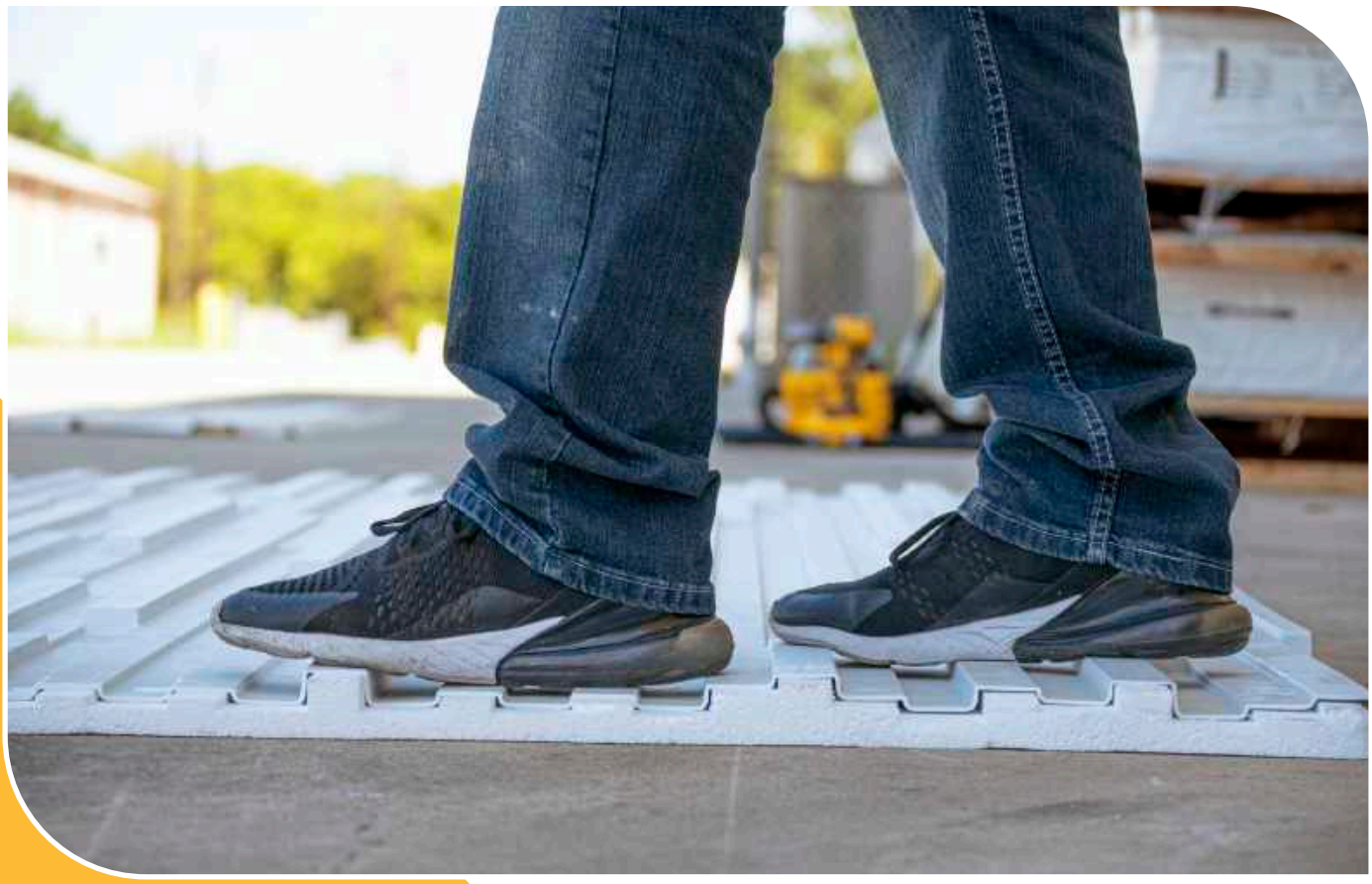
- Use 2-3 roofing nails (depending on the size of the hole) in one hole to avoid using dowels. Insert the nails into the hole and hammer them in place. This method is only applicable to formliners that do not have solid foam backing sheets.
- Screws may work better than nails to fasten the formliner on patterns with deep relief and custom EPS foam backing sheets.
- The formliner can be easily secured to the casting bed using double-sided foam tape. The tape should be centred on the formliner seams on most patterns. Carpet tape in the range of 1/32" to 1/16" is recommended. The formliner and the concrete must both be clean and dry.

**Glues and other adhesives should be avoided. If the glue isn't properly applied, it may cause less than optimal results. For example, unevenly and heavily sprayed adhesive can telegraph through on smooth surfaced formliners. This will cause an uneven finished surface. The thinner the formliner, the more this will show. If you must use glue, make sure to test it thoroughly, by doing a mock up, prior to use. Be sure to review the poured concrete mock up throughout the day. The sun light will cast different shadows at different times of the day and orientation to the sun.**

## Step 3 – Backing plastic formliners

Some formliners will require additional support to avoid deflection under the weight of the concrete or walking on. Patterns with areas wider than 3/4" that are above the substrate or with a depth greater than 3/4" and/or along the formliner's perimeter may require backing.

Wood, EPS foam, and expandable spray foam can be used between the formliner and the substrate for backing. Full EPS foam backing sheets are available for the more complex patterns that need backing.



## Step 4 – Sealing

All seams, holes, and intersections in the formliners MUST be sealed.

- This minimizes the change in color of the concrete at these locations.
- It stops concrete from leaking behind the formliner.
- It stops air and water from getting trapped behind the formliner.
- It will make stripping easier and minimizes damages.

**Failure to properly seal the formliners will result in disastrous results. When concrete leaks behind the formliner, it pushes itself under the formliner along with air and water. This causes blisters and dimples on the finished concrete surface. Furthermore, the concrete in these areas will have a different appearance, and the formliner will become stuck in the concrete.**

Follow this image guide to see examples and places to consider when sealing formliner.

**Sealing formliner with caulking – Uneven Edge**

**Sealing formliner with caulk at seam**

**Screeding caulk with putty knife on smooth rib**

**Seal at all locations where concrete may leak behind formliner**

**Pro tips:**

- Expandable spray foam and caulking can be used to seal larger gaps.

**1. Apply spray foam in gap**

**2. Allow the foam to ooze out and harden**

**3. Cut the foam flush and finish sealing remaining openings with caulk.**

## Step 5 – Spraying formliner with form release

Before each use, spray formliners with a form release product. Follow these steps:

A. Thoroughly clean the formliner before and after each use.

B. To test form release compatibility with the formliner, apply a small amount to the slick or back side of the formliner. Use a product that is NOT solvent or petroleum based. If the test area becomes tacky, the release is incompatible with the formliner and cannot be used.

C. Spray the formliners with the previously tested release, changing the spraying angle to ensure complete coverage.

D. Pour the concrete within 24 hours of spraying it.

# Auxiliary Elements
(Rustications, Ties and Bar Supports)

## Rustications or reveals strips

Matching and aligning ribbed and vertical patterns is extremely difficult. When stacking formliner on tall pours, rustications or reveal strips are recommended at formliner butt joints. A properly sized rustication will complement the pattern and can improve the structure's overall appearance.

## Ties and bar supports

The tie spacing should be per the requirement of the concrete forms and preferably at the formliner pattern repeats. A hole saw can be used to drill or cut holes for ties that fit tightly. Ties that are in the "valley" of the concrete ("peak" of the formliner) may not be as obvious. It's easier to fix tie holes in the "peak" of the concrete (in the "valley" of the formliner).

The part of the formliner that is in contact with the formwork or casting bed should always be where the bar supports or spacers rest. The spacing between the legs of the bar supports should match how the pattern on the formliner is repeated. To keep the concrete from getting rust stains, supports and spacers should be made of plastic or have plastic tips.

If you walk on some deeper patterns in pre-cast or tilt-up work, they may deflect and change shape. When putting down the bar mat, workers should walk on 1/4" thick plywood strips to spread the weight on the formliner. The thin strips of plywood are flexible enough that they can be pulled out through the bar mat. During concrete placement, the load is spread out by the concrete itself. If you can, walk on the reinforcing steel instead of the surface of the formliner.

## **Pouring** Concrete

**It is strongly advised to create a mock up pour to demonstrate the results on the finished concrete surface. The mock up pour should mimic as many phases of actual job conditions as possible, such as tie holes, boxouts, corners, reveals, wall intersections, and joints. The mock up pour should be the same height as the tallest finished wall.**

Architectural concrete involves mix designs that maximize workability while meeting strength requirements. Here is a checklist of things to think about before and when pouring.

**Before pouring**

- Inspect the forms and formliner to ensure that all joints are properly sealed.
- Remove any dirt, debris, or standing water.

**When pouring**

- Use an elephant trunk and tremie method to reduce aggregate separation, splatter, and trapped air. Dropping the concrete directly against the formliner can result in surface abrasion or deformation, which can lead to a defect in the finished concrete.
- Do not move architectural concrete horizontally; instead, pour it in two-foot continuous lifts. Flow lines and sand streaking will be visible in the finished surface if horizontal movement is used.
- Stopping the concrete pour halfway up the pattern will result in a visible cold joint in the finished surface.
- The most common method of consolidating architectural concrete is internal vibration. Air voids, lift lines, and surface blemishes can all be reduced with proper vibration.

- The formliner should not come into direct contact with the vibrator. Follow the ACI recommendations for concrete vibration.
- In tilt-up wall applications, pour concrete approximately 6” above the formliner starting from the center and working with rakes to the outside perimeter. Concrete should not be pushed under the formliner. Ensure seals are still intact.

## **Stripping** and Cleaning Formliners

Here are the most important things to remember when stripping and cleaning the formliners.

- Within 24 hours of pouring concrete, strip formliners at a 90-degree angle to the concrete surface.
- Maintain consistency from the time of pouring concrete to the time of stripping throughout the entire project to avoid variations in concrete color.
- Stripping forms with architectural formliners requires more force than smooth formwork.
- Stripping high profile patterns is more difficult than stripping low profile patterns.
- Lifting tilt-up panels should be avoided until the concrete has reached the specified compressive strength.
- Custom Rock V-Lite formliners are simple to clean with a stiff brush and household detergent.





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