Fast Formliners Co.

Application Guide

Delivery

All products shipped by Fast Formliners undergo a quality control process to ensure no defects or damage exists prior to shipping. Unfortunately, freight carriers often do not give our formliner shipments as much love and care as we do, and damage sometimes occurs during transit. It is very important, therefore, to closely examine your shipment before releasing the delivery company of their liability by signing the Bill of Lading. If damage to the liners is not noted on the Bill of Lading, the cost of repair or replacement is not likely to be reimbursed by the freight carrier.

Our liners are typically shipped on a pallet with an overall footprint 2-3 inches wider and longer than the formliner being shipped. Formliners are nested and stacked as high as possible to reduce the overall number of pallets in the shipment. Order numbers, weights and pattern numbers are marked on the pallet for identification.

Storage

To increase the life of your formliners, proper storage is essential. Heat and direct sunlight are the biggest enemies to your formliners. Formliners should be stored indoors, or in a cool, dry place and covered with black polyethylene sheeting to protect them from the elements. Ultraviolet radiation can cause formliners to become brittle or discolored, and permanent deformation can occur if they are exposed to temperatures above 140º Fahrenheit. Formliners are combustible, so keep them away from open flame or welding sparks, eFastially if the liners have been coated with any type of form release.

Tolerances

Formliners are built to design specifications at our factory, under the weather conditions at the location and time of manufacture, within 3/8” tolerances in length and width for unbonded liners (not mold-bonded to ¾” plywood) and 1/8” tolerances for bonded liners. Because of the rubber-like or plastic nature of the formliner materials, variances in weather/temperature can have an effect on the size of the formliner due to thermal expansion and contraction. A 10º temperature change could affect certain liners in size by as much as ¼”. Every effort is taken to minimize dimensional variance, but due to the flexible nature of the materials involved, dimensional tolerances of a few millimeters in liner thickness is also unavoidable and should be expected, especially on unbonded urethane liners.

Form Placement

Formwork must be used with all formliners. The formliners themselves are not designed to provide adequate support for the pressure of concrete pouring. Many plastic or semi-elastomeric formliners will require additional backing beneath the pattern features to support the voids from collapsing under pouring pressures. It is important

that forms for architectural concrete be aligned and in common planes. A “stack up” of manufacturing tolerances can result in forms being in different planes, even when properly aligned. This creates a noticeable “step” in the finished surface, particularly with shallow form liner patterns.

All formwork should be sufficiently rigid to remain sealed during concrete placement and vibration. Seal all joints and tie holes by caulking or gasketing to prevent grout leakage. Further recommendations are contained in ACI 347-68.

Do not lap formwork over previous pours which have uneven architectural surfaces. Such lapping will result in an uneven surface and grout leakage, marring the finished appearance.

Tie Placement

Plan your formwork so that tie placement is at rustication, reveals or other locations, to minimize the visual effect in the finished surface. Remember to allow for the depth of the form liner when calculating the break back requirement for ties.

When using a rib pattern, locate ties at the high point of the form liner rib. This places the tie in the recess of the finished surface where it is less visible. The maximum diameter of the tie (cone, she-bolt, taper tie) should not exceed the minimum width of the rib. Provide a minimum of 1” concrete cover for ties requiring breakback. If cones are used, the diameter of the cone should be less than its depth to facilitate patching.

The rubber-like nature of urethane form liners simplifies sealing the tie holes. A slightly smaller tie hole diameter (1/8” less) in the form liner will create a gasket effect and minimize grout leakage. Of course, the tie hole in the plywood or steel backing must be large enough to accept the tie being used. Additional protection against leakage can be achieved by the use of tie hole sleeves. This will prevent concrete and moisture from absorbing into the edge of the plywood that is exposed from drilling the tie hole in the liner.

Form Liner Joints

It is very difficult to match certain pattern features such as sandblast or fractured surfaces at joints to make the surface appear continuous. Slight differences in shape, thickness and texture will have a visible effect on the seam of the finished surface. For this reason, avoid or minimize both vertical and horizontal joints.

When joints are unavoidable, make the joint along the main features of the pattern. Match pattern features carefully, and minimize grout leakage at the joint. This practice will help reduce the visible effect on the finished surface. Apply a sealant to form liners edges and then firmly butt edges. Compress the joint as tightly as possible, without buckling or distorting the pattern. Dress joints and edges with a utility knife or sander to match pattern features as closely as possible. Consider the pattern dimensions of form liners constantly to achieve an overall balanced design. It is especially important to consider pattern dimensions when planning for unavoidable joints, boxouts and corners in the finished surface. Fast Formliners can produce liners as big as a truck can ship, so use this to your advantage to minimize seams. For best results, use rustication at form liner joints to avoid joint problems.

Rustication

Rustication, or feature strips are often used at form liner joints. For the best results on detailed textures like sand blast or fractured surface, it is recommended that rustication be used instead of butting liners next to one another. This not only accentuates the pattern, but eliminates the need to produce a perfect butt joint and texture match.

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Handling

Once attached to formwork, store form liners horizontally. Avoid striking the face with heavy, sharp, or heated objects that could cause permanent damage. Avoid stacking heavy objects on top of the liner face, as this could cause permanent deformation of the texture.

Cutting and Drilling

Form liners can be modified by cutting and drilling. A cylinder type hole-saw can be used for drilling. Perform these operations on form liners that are securely clamped to a workbench with a cutting guide or drilling template. Liners can be cut by using a circular saw with a fine tooth blade. If reveal strips are being used, adjust the angle of the blade to match that of the reveal strip for a perfect fit. Keep the blade cool by using a water nozzle attachment or by spraying with WD-40 and compressed air. Pull the blade out of the cut every so often to allow it to cool down and to clear out cutting debris. Make slow, steady cuts to avoid melting of the material which can gum up or seize the blade and cause an irregular edge. The rough edges created by cutting and drilling can be dressed with a sander.

Remember to remove all dust and debris from the surface after cutting. Always use proper eye, ear, and respiratory protection when cutting, drilling, or grinding any Fast Formliners product.

Attachment to Formwork

Liners can be attached to the forms from the front of the form with bolts or lag screws 12”-16” on center around the perimeter and interior of the liner. The head of the bolt can be screwed into the face of the liner and covered with a silicon or urethane calking material.

Assemble and brace the architectural side of the formwork first. Attach form liners before setting ties or opposite formwork side. Use a chalk line to lay out a grid where each formliner panel will be laid. Because of dimensional variances mentioned above, a stackup of errors can occur if liners are butted up to one another without regard for the layout grid. Center the liner within the grid before attaching and moving to the next liner. Liners that overlap the grid may need to be trimmed with a circular saw or grinder. Undersize liners will fit within the grid and may need shimming between panels or additional caulking to fill the gap. This is more likely to be necessary with unbonded or semi-elastomeric liners than with liners bonded to plywood. Position form liners against the formwork so that edges, pattern and joints are square. Work with one sheet at a time.

Form Release

Spray form liners with form release before each use and within the same day that concrete is placed. Apply with low flow, wide angle, flat spray nozzle. Spray both sides of flutes or other pattern features and ensure an even coat. Use a large scrub brush to work the release into any crevices. Wipe with a cloth to insure a thorough, even coat to the entire form liner surface and to absorb any puddling. Do not over apply form release agent. Protect treated form liners from precipitation, dust, and debris. Do not apply to reinforcing steel. Once sprayed, do not walk on the form liner. Do not use any form release other than what is recommended by Fast Formliners without written approval from the manufacturer guaranteeing their product for use specifically with our liners.

Repair

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Cuts or tears in urethane form liners can often be repaired with shoe glue or other urethane adhesives. Work the adhesive into the formwork face behind and the edges of the cut or tear. Tack or weight the area while the adhesive is setting. After setting, lightly sand residual adhesive to avoid a gloss-producing spot on the concrete.

Delamination or air pockets are occasional occurrences on elastomeric formliners. Delamination is when the rubber portion of the liner begins to separate from the plywood backing. Formliners are tested for air pockets in our factory prior to shipping, although occasionally an air pocket is not detectible until the liner is exposed to the sun out on a jobsite. The increased temperature can cause any air trapped between the plywood and the rubber to expand and swell into a bulge. The repair process for delamination and air pockets is essentially the same. The process involves drilling a small hole in the surface of the liner and injecting glue with a syringe.

Stripping Formwork

Strip formwork so that the form remains as parallel to the concrete face as possible. The force required to strip a form will depend on the surface area of the pattern and on the percentage of the pattern at right angles to the direction of stripping. A low profile pattern will be easier to strip than a high profile pattern. Strip formwork within 24 hours of concrete placement. It is important to maintain a consistent interval from time of placement to time of stripping through the entire project to avoid variations in concrete color. If specifications require additional curing time beyond 24 hours, break the liners free from the concrete within the first 24 hours, and then place the form back on the wall to finish curing. The more time that elapses between pouring and initial stripping, the more difficult it will be to release the liners from the concrete.

In stripping urethane form liners, the material resiliency can be used to allow the formwork to strip itself. Use a hydraulic jack to separate (push) the top of the formwork from the concrete. Allow the jack to remain in place for approximately 15 minutes. The formwork will slowly resume its original shape and strip itself away from the finished surface. If jacking is not possible, a stripping force can be used on the jack side of the form to separate (pull) the top of the formwork from the concrete. The stripping angle should always be as perpendicular to the form as possible. Once a small gap is created at the top of the form, water can be used as a bond-breaker if poured down the gap. A small amount of detergent can be added to the water, if necessary, to aid in breaking the initial bond.

Cleaning

It is important to keep the liner surface free of dirt, debris, and buildup of concrete between pours. It is recommended that the liners be cleaned between each pour to avoid a buildup of concrete that can affect the surface finish and stripping of subsequent pours. Liners can be cleaned by using a stiff scrub brush and form release. Liners can be rinsed with water to remove any debris clinging to the surface. Always apply a fresh coat of form release after cleaning and between pours.

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